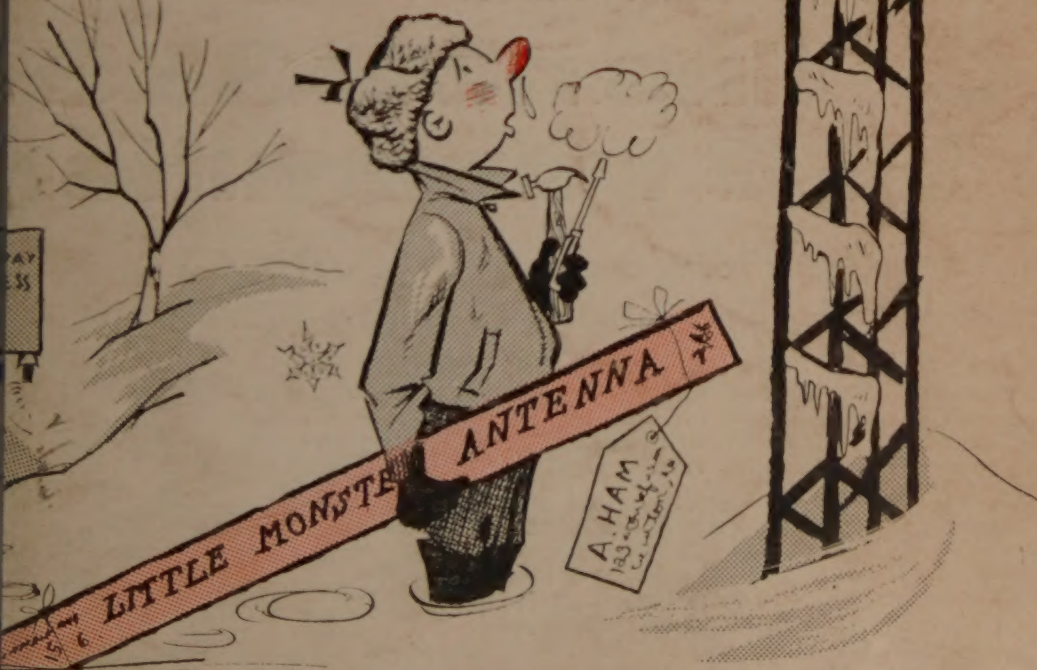


CQ



Make your reservation now for the ANNUAL SINGLE SIDEBAND DINNER.
March 25, 1958. Contact The SSB Amateur Radio Association, 261 Madison
Avenue, New York 16, New York.



Here is an operating model of

Collins new 32S-1 SSB transmitter

*Another potent and clean SSB signal from Collins
to be available this summer at a tentative price of only \$555**

Previewing the 32S-1: 175 watts PEP input . . .
80-40-20-15-11-10 meter bands . . . upper-lower
sidebands . . . break-in CW . . . ALC . . . RF
feedback . . . Mechanical Filter . . . VOX . . .
Permeability Tuned Precision VFO.

Here is a clean 100 watts output for you. Simple
tuning and band change, typical Collins stability.
The six HF bands covered by 13 200 kc segments
with crystal controlled injection oscillator. Dual
6146 output. It's just slightly larger than the
KWM-1. Accessories include phone patch, direc-
tional wattmeter. Antenna relay built-in.

Abbreviated specs

EMISSION — upper or lower sideband and CW.
SIZE — $6\frac{3}{16}$ " H x $14\frac{1}{2}$ " W x 11" D.
WEIGHT — 16 pounds.
POWER OUTPUT — 100 watts.
FREQUENCY STABILITY — ± 100 cps-reset 1 kc.
SUPPRESSION OF HARMONICS AND OTHER SPURIOUS
RADIATION — Carrier —50 db, unwanted side-
band —50 db, 3rd order distortion —30 db.

*\$690 with power supply.

Uses same power supply as KWM-1.

See your Collins distributor. Get your order in now

Collins

CREATIVE LEADER IN COMMUNICATION



For further information, check number 1 on page 126.

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James D. Summers, Suite 556, Pure Oil Building, 35 E. Wacker Drive, Chicago 1, Ill. ANdover 3-1154.
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CLELL K8DKY



DAR K8ADS



DICK K8BMJ



DOUG K8GNA



AL W8HTX



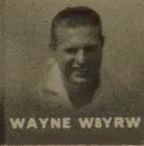
REX K8GND



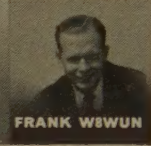
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GIL W8QAH



WAYNE W8YRW



FRANK W8WUN



AL K8BLL

All of these licensed radio amateurs make important contributions to the Heath line of fine ham kits. In a sense, they are your personal representatives within the company, because their design ideas and performance preferences reflect not only their own "on-the-air" experiences, but those of the amateur fraternity with which they are in constant contact. With this kind of representation in Benton Harbor, you can continue to rely on high-performance Heathkit amateur radio equipment designed by hams, for hams!

HEATH *hams work to bring you*



CHUCK K8CJI

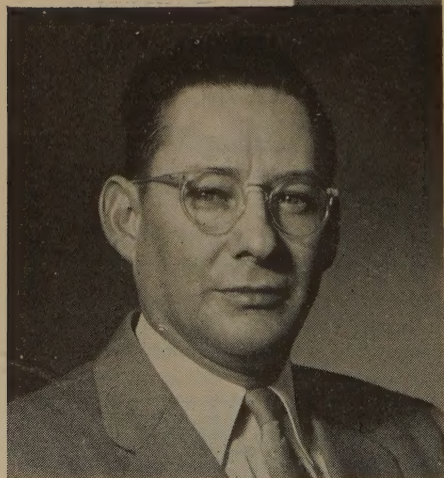
HEATHKIT 50-WATT CW TRANSMITTER KIT

MODEL DX-20

\$35⁹⁵



If high efficiency at low cost in a CW transmitter interests you, you should be using a DX-20! It employs a single 6DQ6A tube in the final Amplifier stage for plate power input of 50 watts. The oscillator stage is a 6CL6, and the rectifier is a 5U4GB. Single knob band-switching is featured to cover 80, 40, 20, 15, 11 and 10 meters, and a pi network output circuit matches antenna impedances between 500 and 1000 ohms to reduce harmonic output. Designed for the novice as well as the advanced class CW operator. The transmitter is actually fun to build, even for a beginner, with complete step-by-step instructions and pictorial diagrams. All the parts are top-quality and well rated for their application. "Potted" transformers, copper-plated chassis, and ceramic switch insulation are typical. Mechanical and electrical construction is such that TVI problems are minimized. If you desire a good clean CW signal, this is the transmitter for you! Shpg. Wt. 18 lbs.



ROGER MACE (W8MWZ)

SENIOR HAM ENGINEER

HEATH COMPANY



...de W2NSD

never say die

WPX Number Two

Aug Nickel, W2HMJ turned up in November with his 300 cards to be the second winner of the difficult Worked All Prefixes award. Aug has been working hard on this award from the time we announced it in January, but had been held up by a break-down in the W2 QSL Bureau. Apparently this Bureau has now been reactivated by a group in Northern New Jersey and the cards are again rolling through. This is quite a frustration to Aug since he was working hard to be the first winner and was thwarted by factors beyond his control.

Full instructions for the award were given in the January CQ, but essentially the award is given to operators who verify contacts with a minimum of 300 different prefixes. Separate cards are available for phone, cw, and sideband. A WPX application form is available at no cost from CQ. Record booklets are 15¢ each and are twelve page booklets which list all the prefixes known to be available, together with a place to write in the call of the station worked in each prefix. On the back cover are full instructions for the award, a list of the prefixes available and the special stickers that can be won.

Novice Handbook

Donald Stoner, W6TNS, our Novice Editor has written a Novice and Technician Handbook which was recently published by Radio Publications, Inc. This 152 page book (\$2.85) is heavily in the how-to-build-it direction and is the best thing out yet to help the Novice Technician with the special problems that he has to meet. This is not a license manual, it is a handbook. All of the material in the book is original... there are **no** reprints of magazine articles. Theory is kept to a minimum and most of the book is devoted to construction of receivers and transmitters designed to exactly meet the needs of Novices and Technicians. Certainly every ham will want a copy of this outstanding book, and a Novice or Technician cannot really afford to be without it.

Ham Job Opening Soon

This is the last call for applications for a rather fascinating low paying job. We need an avid ham with a good technical background to work full time at building special projects for CQ, testing new commercial equipment, operating the CQ Headquarters Station, and other stuff. Writing ability, technical background and variety of ham experience count. So, who wants to be a professional ham. Quite a deal, eh? Starting salary up to \$100 a week. And you couldn't find a nicer outfit to work for.

Make the letter and arguments good, everything counts. Address it to Slave Labor, CQ Magazine, 300 West 43rd St., N. Y. 36. Don't forget minor details like what awards you have won, what bands you have operated, what DX you have worked, clubs you have belonged to, rigs you have built, schooling, age, present or last job, the job before that, the job before that, etc., and how come you couldn't hold all those jobs. Or if you're married, childreared, other hobbies, sick, have a car, read, member of AA, member of AAA, or possibly a member of A.

Flying

My editorial mention of flying in December brought forth several letters from fellows who were interested in getting organized. George Zarin, W2DIO, a CAP Captain and head of the Ham department of Harvey Radio has agreed to act as a communications center for the flying ham division. Drop a card or note to George (c/o CQ, 300 West 43rd Street, N.Y. 36) and you will be listed in CQ when we get this going. If you've done any airborne hamming, that would be of interest. You know, what bands, power, how'd you work out, etc.

Corrections

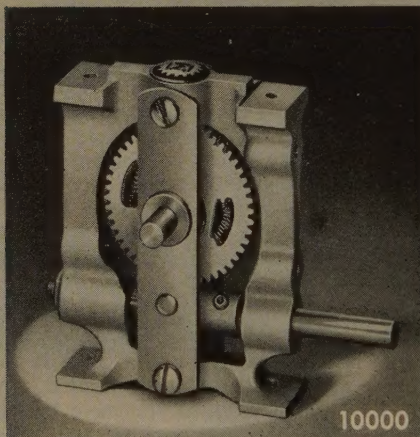
A letter from Robert Gluck, K6BNB, suggests that we run a specific column every

More on page 10...

Designed for



Application



The No. 10000 WORM DRIVE UNIT

One of our original Designed For Application products, tried and proven over the years. Rugged cast aluminum frame may be panel or base mounted. Spring loaded nickel plated cut brass gears work with polished stainless steel worm to provide low back lash. $\frac{1}{4}$ " diameter stainless steel drive and driven shafts. Available in two ratios, 16:1 and 48:1. Specify ratio in ordering.

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More editorial . . .

month in a specific place to bring out corrections of articles of the previous month. While there generally are only a few corrections made each year, it certainly is a good idea and might be expanded to include amplification as well as corrections. So, we'll give it a try. One of these months we may make many mistakes that we'll cancel the whole idea in embarrassment.

So, fellows, if you run across anything that is an obvious goof drop a line to the Correction Department, c/o Harassed Editor, CQ, 33 West 43rd Street, New York 36, N. Y. You know, like important parts left unvalued, electric chair electrodes left unconnected, etc. Most corrections will have to skip an issue since we have only about a week between the arrival of your magazine and the closing of our next issue. We'll find an appropriate obscure spot in the magazine to hide our dim linen.

Ham Shop

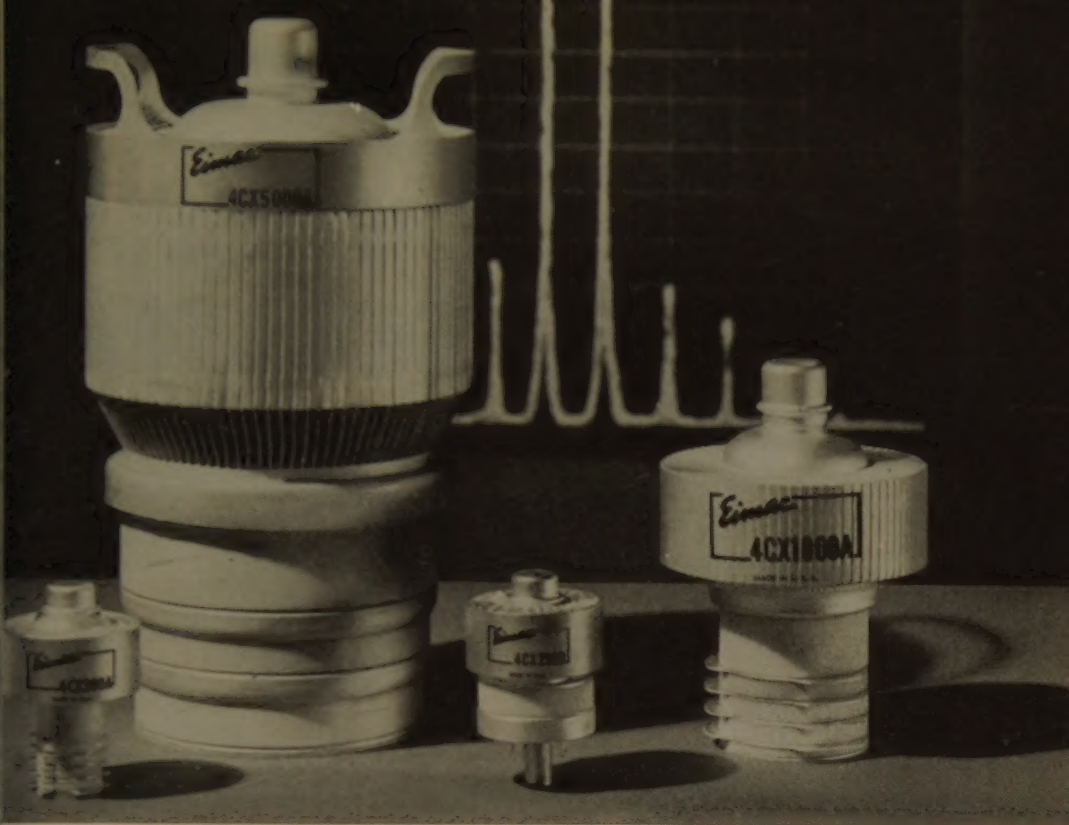
Maybe you think we make all our money on the Ham Shop section of CQ, but really that is more of a convenience than anything else and the small fees charged go toward paying a gal to take care of all the tedium of getting it right every month. We have been taking a licking on this deal though and finally have had to raise our word rate just a wee bit to even things out. Rich it won't make . . . poor it won't make you, but it's up.

Better Photos

Since about 1/3 of the CQ readers are also interested in photography it baffles me that a few authors are able to come up with much more than an out of focus dimly lit Brownie shot of the equipment taken from ten feet. Let's get with it gentlemen. Taking pictures of radio gear isn't that difficult. Certainly if you don't have a good camera then you must know a brother ham who does have one. Get him over for a couple shots, or even better for dinner. Once he has been fed he can hardly say no to your request for a couple of pix of the super bandbanger receiver you just completed.

Hints. Once you have located the chap with the good camera and have fed or oiled him into submission then get things set up. The best way is to set the camera up on a tripod so it is nice and steady. Light up the subject and get a light meter reading. Set the camera for the smallest aperture available and open the shutter. This will give you a long exposure possibly thirty seconds if you aren't using too fast a film and you don't have too much light. While the shutter is open move one light around to paint in any shadows. This will give you an excellent shot. Please?

[Continued on page 24]



The Ideal Approach to SSB... Eimac Ceramic Tetrodes for Class AB₁

Generating a clean SSB signal is one thing... simplifying it to the desired power level without distorting or broadening it is another. A modern class AB₁ final amplifier designed around an Eimac ceramic-metal tetrode is the ideal answer to the problem. Three of the four Eimac ceramic tubes shown above — the 4CX250B, the 4CX300A and the new 4CX1000A — are ideal for amateur radio application. All four offer the high power gain, low distortion and superior linear performance that is needed for class AB₁ operation. Each has performance-proved reserve ability to handle the high peak powers encountered in SSB operation. Efficient integral-finned anode cooler and Eimac Air System

Sockets keep blower requirements at a minimum and allow compact equipment design. And all four incorporate the many advantages of Eimac ceramic-metal design, which assures compact, rugged, high performance tubes.

The reliability and performance that make Eimac ceramic tubes the choice for government and commercial transmitters can be yours in a compact, SSB tabletop kilowatt or a deluxe mobile rig. Eimac ceramic tetrodes simplify design and give more watt-hours per dollar.

For a copy of Application Bulletin #9 "Single Sideband" write our Amateur Services Department

TEL- McCULLOUGH, INC.
SAN BRUNO • CALIFORNIA

Eimac First with ceramic tubes that can take it



CLASS AB₁ SSB OPERATION

	4CX250B	4CX300A	4CX1000A	4CX5000A
Plate Voltage	2000 v	2500 v	3000 v	7500 v
Driving Power	0 w	0 w	0 w	0 w
Peak Envelope Power	325 w	400 w	1680 w	11,000 w

"Phasemaster II-A"

IMPROVED AND ADVANCED OPERATING FEATURES

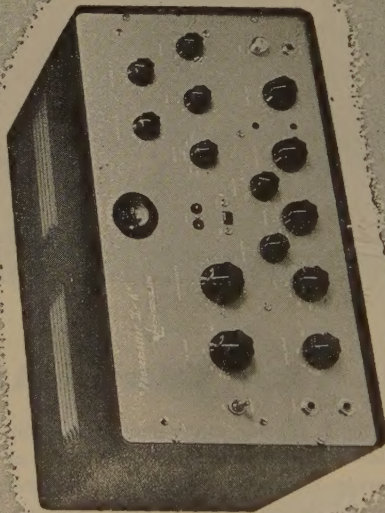
SSB or DSB suppressed carrier or with carrier, PM and CW.

6146 power amplifier delivers 65 PEP watts output, giving sufficient power to drive nearly all types of linear amplifiers INCLUDING grounded grid finals.

Calibrate control allows variable control of signal for zero beating VFO to receiver frequency or TOF (talk on frequency.)

Voltage Regulation of 6146 Screen and 9MC OSC.

Temperature compensating condensers in critical 9MC circuit for improved stability.



ALL BAND OPERATION

FRONT PANEL OPERATING CONTROLS

Emission switch with 5 positions for selecting CW
PM — AM or DSB — Sideband 1 — Sideband 2

Indicator Switch —

Position 1. Tuning eye indicates R.F. output.
Position 2. Tuning eye indicates when flattopping occurs.

Valuable aid for tuning up on AM and as a Distortion indicator for SSB.

"Phasemaster II-A" complete \$329.50

"Bandhopper" VFO complete \$139.50

P-400 Grounded Grid Linear Amplifier \$269.50

Price and design subject to change without notice.

See Your Dealer or Write Today

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MANUFACTURERS OF PRECISION ELECTRONIC EQUIPMENT



Feenix, Ariz

Dear Hon Ed:

Are hoping you are feeling reel well, Hon Ed., on acct. Scratchi not the same. No in deedy, I are being on sickly list, and gulping down pills by carloads. Pills shaped like foot balls, pills shaped eggs-shaped and almost same size, green ones, red ones, and capsools made of selyouloyd. In fackly, it are these capscool what getting me so mad.

Frend of mine, who working at neerby place what making compooters, are dropping by seeing me on acct. he heering I not ship-shap. He bringing me a present. Are in a box about half the size of matchbox. I opening it am looking in, but all I are seeing are two ded moskeetoos.

He asking how I liking them, and I telling him that two ded moskeetoos are just what I needing, I think. At this he laffing like furier and telling me he not giving me moskeetoos, he giving me cupple transisters. He explaineing that they are brand new type which not havin big old metal case on them, and he thinking maybe I like to making broadcast reseever out of them, or sumthing. He also leeving me some reel teeny capacitors and some eleventeenth watt resistors.

So, next day, I thinking and thinking about the kind of reseever I wanting to make. An desiding first crack out of the box that I not wanting any reseever bilt into cigaret package or anything like that, on acct. everybudd bilding reseevers in things like that. No in deedy, Scratchi are wanting to bild reseever in something diffрут.

I happening to be taking Hon. Pills at that time, and just when are swallowing capscool that I getting idea. Why not bilding it in capscool? I taking one, and pulling two ends apart dumping out medisn, and there you are, reel neet empty capscool!!

So, getting together magnifying glass, nail polish, nice big needle, modelling clay, air plane cement, and other stuff I needing, and setting to work. Well, almost setting to work. Are accidently breathing hard on work bench and transister are blowing off bench, but with help of magnifying glass are finding it in abouts ten minutes.

Incomparable Value!



Model SX-100
Amateur Net \$295⁰⁰

• In all our quarter-century of manufacturing, no Hallicrafters design has received more enthusiastic approval than the SX-100 receiver.

How have we measured this approval? *First*, by the letters we receive—more favorable comment than ever before. *Second*, by the conversation we hear on the air from owners and observers alike. *Third*, by sales—the SX-100 is one of the *fastest selling communications receivers we've ever designed*.

Never before has there been available a receiver with all these quality features at such a reasonable price. Better look into it yourself, today. Your jobber has the details.

1. Selectable side band operation.

2. "Tee-Notch" Filter—This new development provides a stable non-regenerative system for the rejection of unwanted heterodyne. The "Tee-Notch" also produces an effective steepening of the excellent 50 KC i.f. pass band (made famous in the SX-96) and further increases the effectiveness of the advanced exalted carrier type reception.

3. Notch depth control for maximum null adjustment.

4. Antenna trimmer.

5. Plug in laboratory type evacuated 100 KC Quartz crystal calibrator—included in price.

6. Logging dials for both tuning controls.

7. Full precision gear drive dial system.

8. Second conversion oscillator crystal controlled—greater stability through crystal control and additional temperature compensation of high frequency oscillator circuits.

9. Frequency range: 538-1580 kc. 1720 kc-34 mc.

CONTROLS

Pitch Control • Reception • Standby
Response control (upper/lower
side band selector)

Antenna Trimmer • Notch depth
Notch Frequency • Calibrator
on/off • Sensitivity • Volume
Band Selector • Tuning • AVC on/off
Noise limiter on/off
Bandspread • Selectivity.

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selectable
sideband
receiver
proved best
in its field
by far!

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communications are born

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For further information, check number 13 on page 126.

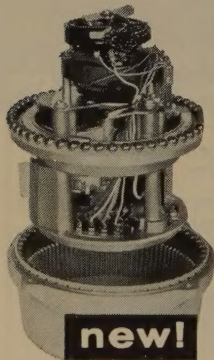
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C·D·R "HAM-M" Beam Rotor

Will support and rotate the heaviest beams commercially available. Weather-proof high pressure cast aluminum alloy housing. Heavy-duty holding brackets with stainless steel U

bolts and nuts. Standard mounting on present towers. Complete system ready to install.



Heavy-duty broached-cut stainless steel motor gears and pinions. 98 ball bearings in nylon retainers. High tensile strength die-cast aluminum-alloy housing, with positive lock-and-hold brake that eliminates drift. Solenoid-operated brake release. Electrical end-of-rotation protection



Sensitive 1-ma. meter indicator for pin-point accuracy. Separate transformer for direction indication. Double-stage switch permits instant direction reading without moving rotor. Heavy-duty power transformer. Designed for 8-wire cable.

out moving rotor. Heavy-duty power transformer. Designed for 8-wire cable.

ONLY \$99.50

Amateur Net



CORNELL-DUBILIER Electric Corp., South Plainfield, N. J.

THE RADIART CORP., Indianapolis, Ind.

For further information, check number 14 on page 126.

See them now at Your Local Distributor. Or for full details write for catalog sheet to either of the addresses below

First are putting transistors on tiny dabs of modelling clay so they staying put, then heating up needle so can using as soldering iron. As making connectshuns are dabbing on nail polish to insolate wires, then pushing them in more dabs of clay. Same thing likewise with capacitors and resistors.

Coils I needing I winding around number thirty wire as coil form, then dabbing with airplane cement until dry. Pretty soon having little two-transister reseever all finished inside so shoving ball of clay in capsool, and putting capsool together. Having six leeds coming out—two for batrees, two for earfones and two for antenna.

Winding antenna around outside of capsool and getting all soldered. Then, making temporary lashup of earfone and batree, and trying out. Hon. Ed., it working reel peachy!! Of course, I only making it working on ones broadcast stashun, but that stayshun coming in like millyun bux!!

Now all are needing to do is buying earpiece, and little mercury batree, and can cementing capsool to earpiece and batree to earpiece, and having hole reseever right in Hon. Ear!! Pretty slicky, you not thinking??

So, taking another set of Hon. Pills, getting in car, and driving into city to getting batree and earpiece. It not taking me long, and having no trubble. No indeedy, it are when getting home that trubble starting.

I going to workbench and starting to work again, but not finding capsool reseever. Calling Hon. Brother Itchi and asking if he seeing capsool reseever. He not seeing it. He asking me when last time I seeing it. I telling him when I leeving for downtowns it are sitting in capsool right next to my medesin here on work bench.

Yes indeedy, last time I seeing it I are taking pills just before I—Hon. Ed!! you not thinking what I thinking?? Well, I not knowing what you thinking, but I thinking maybe I swallowing Hon. Capsool Reseever!! Oh, my Hon. Akeing Tummy.

We'll keep looking, and letting you know if anything turns up.

Respectively yours,
Hashafisti Scratchi



hamfest



The Indian Hills Radio Club 3rd Annual Break-Break Pow-Wow family style dinner will be held at Nelson's, 1422 Addison Rd., Cleveland on Saturday night, February 15 at 7:30 PM. Reservations are limited—get yours early. YL's and XYL's invited. Tickets \$2.50. Refreshments, entertainment and prizes. For tickets contact W8ICS IV 1-1834 or W8SZF EV 2-1133.

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THEY MUST BE BEST!

The best always sets the record—and the Hammarlund HQ-110 and HQ-100 have broken all old records and set brand-new ones for popularity. And there's one very good reason for this record-breaking popularity—**REAL VALUE.** You get more of everything that really counts per dollar cost in either the HQ-100 or HQ-110. Check and compare today!



HQ-100

General coverage, 540 KCS to 30 MCS. Electrical bandspread, Q-multiplier, Auto-response, voltage regulated and temperature-compensated stability, automatic noise limiter, 10-tube superheterodyne with noise limiter, and inherent Hammarlund quality—all for only \$169.00*

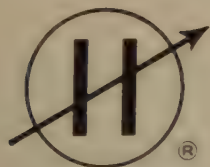


HQ-110

Amateur band coverage of 6, 10, 15, 20, 40, 80 and 160 meter bands. Separate linear detector for SSB and CW signals, Q-multiplier, BFO oscillator, voltage-regulated and temperature-compensated stability, crystal controlled 2nd conversion oscillator, dual conversion, Auto-response, 12-tube superheterodyne with automatic noise limiter, and inherent Hammarlund quality—your best buy for only \$229.00*

*Telechron Clock-Timer \$10 extra.

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COMPLETE
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HAMMARLUND

HAMMARLUND MANUFACTURING COMPANY, INC., 460 W. 34th ST., N. Y. 1, N. Y.

Export: Rocke International, 13 E. 40th St., N. Y. 16, N. Y.

Canada: White Radio, Ltd., 41 West Ave. N., Hamilton, Can.

For further information, check number 15 on page 126.

Letters . . . to the editor

Somebody read our sub ad!

Dear Wayne:

Re December 1957 issue, page 96. . . .

There was a young orphan named 'Annie'

Whose dog was big rough and 'Sandy'.

'Leapin' Lizards' she cry. . . .

Not 'Gloryowsky'

The other was 'Little Annie Rooney'.

William H. Starr, KØEOX

Minneapolis, Minnesota

Aw, you saw thru our little flim-flam.

No active clubs in Massachusetts?

Dear Wayne,

Are there any active ham clubs in this area? I've been unable to find any in North Central Massachusetts. Also wonder if you know of any nets in northwestern Mass?

Bruce Eldridge, K1CIW

119 Main Street

Shelburne Falls, Mass.

I dunno Bruce, maybe someone will write and let you know.

Radio's inventor

Dear Wayne:

Nicola Tesla is the man you describe in your Dec. editorial. I hope you will publish the results of your question as to his identity. He sure deserves a lot more recognition and credit than he has received.

Yates Holleman, W4ZIH

Charlottesville, Virginia

Tesla has a strong fan club in the editorial staff of CQ so don't be surprised if some credit is forthcoming. Matter of fact we have an article in the works by K2AE who worked with Tesla to put on his demonstration in St. Louis in 1898 of two way radio communication. Wouldn't be surprised if this was the first ham radio contact ever made.

Dear Wayne,

Re your question in December CQ: Radio's Inventor—page 102; Yeah! I've heard about this guy, but can't spell his name. Heard about him on Radio Moscow one night!

George Mobus, WØRXK

St. Louis, Missouri

Sorry George, wrong inventor . . . the real one is easy to spell.

Dear Mr. Green:

In the December issue, which arrived today and which is the second copy of CQ to be received under subscription, you are referring in your editorial column to an almost unknown electrical genius—Elihu Thomson. Sorry, but I just couldn't resist showing that I have heard of the man. In fact, he once taught at Central High School in Philadelphia, back in the 1870's, an institution which I myself attended. I recall seeing a portrait of Thomson in the halls. Further, in the old Central High building, now turned over to Benjamin Franklin High, there stands a brass plate commemorating Thomson's discovery of wireless in 1875 on that site. The entire story of this amazing inventor can be found in *Beloved Scientist* by David Woodbury (McGraw-Hill, 1944).

Jay Kay Klein
Syracuse, N. Y.

Wrong man, Jay.

Dear Wayne,

Your editorial had the usual number of integrated commercials this month. I was surprised that you are 1600 Porsche owner. I navigated one in the Continental Divide Rally this year . . . it surely was an impressive machine. We finished third and a ham from Kansas was on the team which won the team prize. That rally is Jim Dandy (to coin an adjective), almost 900 miles of roads that I'd hate to cover in a sedan. I drive a real MGA myself, belong to two clubs, run quite a batch of rallies, and occasionally race.

Bob Schoening, WØTK
Bloomington, Minnesota

. . . I have a Subaco and a Gonset 10-11 behind the gear shift in my MGA coupe . . . how about a rally that is also a transmitter hunt?

Dave Smith, K2CHS/2
Colgate University

Coming, Dave.

Boy Scout ham station

Dear Editor:

We are interested in Troop 14 hereabouts and promote ham radio as a troop project. The scout troop own and operate their own ham station and we would like to know if we are the only troop that is so equipped.

W. E. FitzSimon
Phoenix, Ariz.

What's your QTH?

Oops!

Dear Wayne,

Many thanks for the plug in your December editorial, however I have received over 50 calls saying that my name was spelled wrong and suspicious looks from the FCC for using the wrong call.

Marty Bettan, K2JKX
Flushing, N.Y.

Sorry Morty.

Missing persons dept. . . .

Dear Wayne:

What ever happened to Pop, KA1CM? You mentioned him in your Twin Three editorial. I lost him in Redwood City with a 6 call a couple of years ago. I was KA1BN pre-war.

W4RHC
Vienna, Virginia

Last I heard of Pop was when he went to California. Anyone seen Pop lately?

CQ globe as direction indicator

Dear Wayne:

Enclosed are latest pictures of rotating globe. A rotating globe is the most accurate and versatile of the direction indicators. By taping a tack with scotch tape over your own particular-QTH, the globe becomes adapted to your location regardless where you live.

If you don't have a pair of 110 volt selsyns to drive it, but have a radio-compass direction indicator all is not lost. You can take the globe the way it comes and tape thump tacks on your QTH and a point directly opposite, and use the globe alone. By putting the numbers representing thousands of miles on the wrap-around bar it will show you how far the various countries are from your QTH regardless of where you live. Degree numbers can be put on with decals or a Wrico inking pen.

To align globe and beam, simply point the beam north and turn globe on base (4 fingers) until the north pole is under the bar. Once the globe is set, four strips of scotch tape can be applied to the fingers and globe.

Ken Judge Glanzer, WØLMB/7
Seattle, Wash.

[Continued on next page]



Old timers can tell you that... fixed or mobile... they never had it so good!

Today, Gonset's skillfully engineered modern designs give you 5-band mobile operation... a powerful, complete station with full control at your fingertips.

G66B receivers and G77 transmitters are excellent examples of Gonset leadership in "compactness without compromise" designs. With them your mobile installation offers you the same operating features and conveniences as those of the finest fixed stations. Note too that G66B also covers the standard broadcast band, eliminates need for second receiver.

This same sparkling duo can also give outstanding home station performance on 80-40-20-15 and 10 meter bands.*

G66B, less power supply.....:3046.....209.50

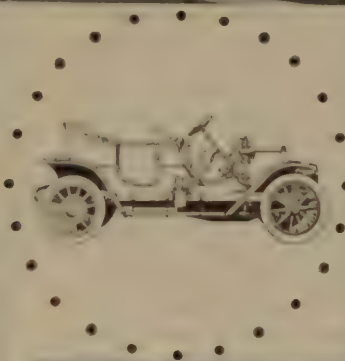
Universal "three way" power supply speaker unit.
12V DC, 115V AC) Factory wired 6V DC, 115V AC.
With patch cable.....:3069-6.....49.50

"Min pack" power supply.
12V DC only; less patch cable...:3098.....29.50

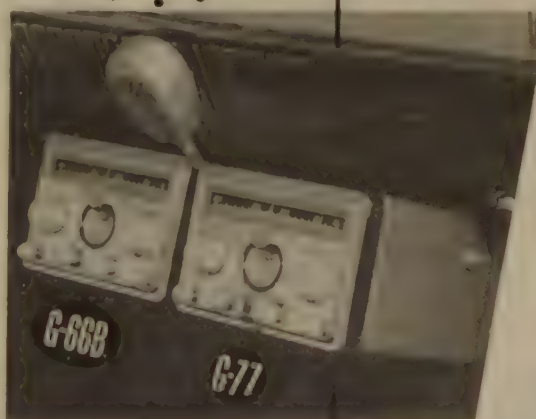
G77 Transmitter with power supply and installation
Model :3116.....289.50
6 and 12 volt operation. Factory wired for 12 volts.

*Special G77 models for AC operation available soon.

For information, check number 16 on page 126.



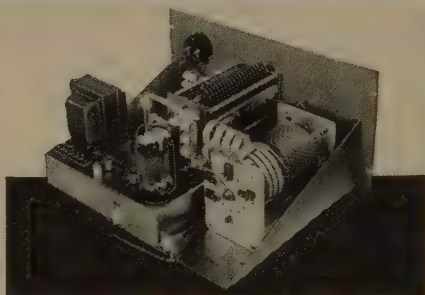
**OLD
TIMERS
CAN
TELL
YOU...**



DIVISION OF
L. A. YOUNG
SPRING & WIRE
CORPORATION
BURBANK,
CALIF.



You
fellows
have
been
asking
for it



. NOW IT'S HERE—the L-1001-A

Ever since B&W first came out with their grounded grid linear amplifier, amateurs from all over the country have been clamouring for just the RF section of the unit.

Now it's here! At last, you can buy only this RF section and have all the advantages of the complete B&W L-1000-A. Use of your own power supply will save many dollars.

Two tetrodes in the RF section are connected as high-Mu grounded grid triodes. Intermodulation distortion products of a grounded grid amplifier are far less than those generated in a conventional grounded cathode circuit because of the inherent negative feed-back. Increased driving power requirements are offset by recovery of most of the driving power in the output circuit.

This RF section will boost your signal to the maximum allowable. Quality of materials and workmanship is unsurpassed. Tuning and loading are precise over the 80, 40, 20, 15, 11 and 10 meter bands. Why not drop in at your favorite dealer and take a look at either the Model L-1000-A or just the RF section, Model L-1001-A. If he doesn't have them in stock write the factory for details.

\$240.00



*Barker &
Williamson, Inc.*

Bristol, Penna.

B&W AMATEUR EQUIPMENT: Transmitters • AM—CW—SSB • Single Sideband Generators • Grounded Grid Linear Amplifiers • Single Sideband Receiving Adapters • Dip Meters • Match Masters • Frequency Multipliers • Low-Pass Filters • T-R Switches • R-F Filament Chokes • Transmitting R-F Plate Chokes • Audio Phase Shift Networks • Band Switching Pi-Networks • Cyclometer-type Counters • Antenna Co-axial Connectors • Baluns • Variable Capacitors • Fixed and Rotary Type Coils • Band Switching Turrets • Standard Inductor Materials •

Letters *cont.*



Judge, W0LMB/7 rotating his beam.



Tack is scotch taped to globe.



Selsyn rotated fingers are taped to other end of globe.

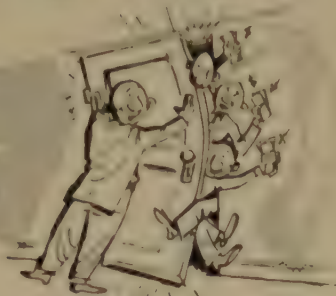
please
please
please
please tell them
you saw it in CQ

← For further information, check number 17 on page 12

We can't hold back any longer!

WE HAVE BEEN DELUGED WITH REQUESTS FOR INFORMATION ON THE NEW 100V, SO WE ARE RELEASING THE FOLLOWING DATA IN SELF DEFENSE—AHEAD OF SCHEDULE.

Central Electronics....



....Proudly Presents

The NEW MULTIPHASE MODEL 100V Exciter-Transmitter

RF OUTPUT: 100 watts average before grid current on all bands using a pair of ultra-linear 6550 tubes in final. Separate POWER OUTPUT CONTROL continuously adjustable down to 10 watts. Drive any linear or use it "barefoot".

FREQ. RANGE: 50, 40, 20, 15 and 10 meters with spare position on bandswitch for 160 meters or other frequencies such as Mars, CAP, commercial, etc.

PRECISION LINEAR VFO BUILT IN: Direct reading 1 KC calibration all bands. Separate .1 MC slide rule dial and KC window. Two speed tuning knob turns precision leadscrew in new Patent Pending permeability tuned two tube oscillator circuit. Fast tuning 100KC per turn. Slow tuning 750 CYCLES per turn!

NO TUNING CONTROLS (other than VFO): Broadband circuits throughout, as introduced in our 600L Broadband Linear. Separate crystal controlled mixers.

NINE POSITION EMISSION SELECTOR: Lower sideband, upper sideband, double sideband, all with suppressed carrier, lower, upper or double sideband (AM) with preset carrier, Phase Modulation (PM), CW and FSK with preset carrier. FSK frequency deviation adjustable.

ONLY FOUR OPERATING CONTROLS PLUS VFO ON FRONT PANEL: Seldom used "set and forget" controls on front panel behind magnetic doors.

METER READS: Watts input 0-200, RF amps output and suppressed carrier level. Has input marked at 100 watts for AM and 170 watts for CW, PM and FSK.

2" RF ANALYZER SCOPE BUILT IN: Monitors RF output wave to show flat topping and prevent TVI.

CALIBRATE LEVEL CONTROL: Choice of either voice or carrier for calibrating signal.

ADVANCED PHASING GENERATOR: With inverse feedback and new PS-2 network. Sideband suppression with new network in excess of 50 db. Built-in audio filter. Narrow signal, plus naturalness, coupled with long term stability are features of new generator.

SIZE AND STYLING: Equal to 600L. PRICE: \$595.00

PLACE YOUR ORDER NOW—THE BACKLOG IS INCREASING DAILY.
WE ARE ALMOST READY FOR PRODUCTION.

MULTIPHASE

EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave.

Chicago 13, Illinois

MULTIPHASE
THE OVERWHELMING
CHOICE OF HAMS
EVERYWHERE

For further information, check number 21 on page 126.

February, 1958 • CQ • 23

You Seen It in CQ

When you write to our advertisers please, please tell them that you saw it in CQ. Same thing goes for the distributors . . . when you drop in at their store tell them you read their ad in CQ. This is darned important, as you probably realize.

Advertising pays most of the freight for us. The subscriptions pay mostly for postage and handling involved in sending them out. Every time a company runs an ad in CQ they want to see some results, naturally. The results have been excellent, hence the ever increasing number of ads, which brings you an even greater increase in space for articles.

We want to keep this spiral going up so we can bring you even more articles and columns. You can help in this by mentioning CQ to our advertisers and by using the readers service coupon on page 126.

Call Letters for Cars

One of the most inexpensive call letter deals I've seen yet for cars (providing you don't have call letter plates) turned up at the local Strauss Store. Costs 49¢ and includes a miniature license plate with a complete set of letters and numbers. Called Mini-Plate, it is designed for bicycles and cars. Looks nice and the letters are 3/4" high.

Single Sideband Communications Book

The TechRep Division of Philco Corporation has come up with a fine technical manual on SSB. This 148 page book is written for the Philco TechReps and thus stresses more the theory angle than the how-to-do-it. It is filled with lots of block diagrams and simplified diagrams which help to get across some of the rather complex concepts involved. This book is certainly to be recommended for anyone who is interested in learning how SSB works.

SSB Annual Dinner, Hotel New Yorker, New York City, March 25, 1958. Tickets—\$7.50 each. Sponsored by Single Sideband Amateur Radio Association, Inc. (SSBARA), 261 Madison Avenue, New York 16, New York.

Sebring

Several fellows have written in suggesting that we all get together down at Sebring this March. Fine with me. Let me know where and when and we'll put it in the March CQ and see how many we can gather. Let me know right away as the March issue closes a couple days after you get this issue.

May

We're planning another special May Mobile Issue this year, so if you have any material that should be in it you'd better get it in soon. Make 'em short for we are very short of space.

[Continued on page 114]

NEW!



See your Distributor or write for brochure and pricing information on the BASSETT All Band Model VC-1075 Vacuum Coil, and other mobile accessories.

BASSETT VC-1020/KWM-1 Complete Antenna System For Use With The KWM-1 Mobile

- Bassett Vacuum Coil Antenna for 10-15-20 meters
- A 52 ohm antenna requiring no matching devices
- Feed direct with RG-58/U or RG-8/U cable
- The ultimate in mobile antenna efficiency
- Complete antenna including B-36 base rod and F-60 top rod
- Positive locking heavy silver plated switch contacts
- Hermetically sealed and helium filled
- Engineered to handle 1 KW input pep
- Factory engineered for resonance and minimum VSWR
- No field adjustment required for optimum performance
- Unconditionally guaranteed with any mobile equipment

Model VC-1020/KWM-1—\$48.50 Amateur Net Complete Antenna, Vacuum Coil, Base Rod, and Top Rod

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For further information, check number 22 on page 126.

from the line that's among the nation's amateurs!

“RANGER” TRANSMITTER—outstanding amateur transmitter will serve as an RF and audio exciter for power equipment. As an exciter, it will be any of the popular lowest level kits. No internal changes necessary to use from transmitter to exciter operation. Self-contained, 75 watts CW or 65 watts phone input... instant bandswitching 80, 40, 20, 15, 11, and 10 meters... extremely stable, built-in VFO or crystal control—effectively TVI suppressed—high gain audio—timed sequence (break-in) keying—adjustable wave shaping. Pi-network antenna load matching from 50 to 600 ohms. Easily assembled—with tubes, crystals, key and microphone.

No. 240-161-1...
..... Amateur Net \$229.50

No. 240-161-2... Wired and tested..... Amateur Net \$329.50

VIKING “VALIANT” TRANSMITTER—Designed for outstanding flexibility and performance. 275 watts input on CW and 558 (P.E.P. with auxiliary 558 exciter), 200 watts AM. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network tank circuit will match antenna loads from 50 to 600 ohms—final tank coil is silver-plated. Other features: TVI suppressed—timed sequence (break-in) keying—high gain push-to-talk audio system—low level audio clipping—built-in low pass audio filter—self-contained power supplies. With tubes, less crystals, key, and microphone.

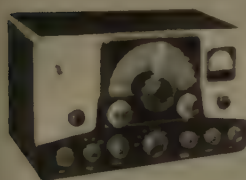
Cat. No. 240-104-1...
Kit..... Amateur Net \$349.50

Cat. No. 240-104-2... Wired and tested..... Amateur Net \$439.50

VIKING “FIVE HUNDRED” TRANSMITTER—Rated a full 600 watts CW... 500 watts phone and 558 (P.E.P. with auxiliary 558 exciter.) All exciter stages ganged to VFO tuning. Two compact units: RF unit small enough to place on your operating desk beside receiver—power supply/modulator unit may be placed in any convenient location. Crystal or built-in VFO control—instant bandswitching 80 through 10 meters—TVI suppressed—high gain push-to-talk audio system—low level audio clipping. Pi-network output circuit with silver-plated final tank coil will load virtually any antenna system. With tubes, less crystals, key, and microphone.

Cat. No. 240-500-1...
Kit..... Amateur Net \$749.50

Cat. No. 240-500-2... Wired and tested..... Amateur Net \$949.50



“ADVENTURER” 50 WATT TRANSMITTER—Used to earn first Novice WACI (worked All Continents.) Self-contained, effectively TVI suppressed, instant bandswitching 80, 40, 20, 15, 11, and 10 meters. Operates by crystal or external VFO. An octal power receptacle located on the rear apron provides full 450 VDC at 150 ma. and 6.3 C at 2 amp. output of supply to power auxiliary equipment such as a VFO, signal generator, or modulator for phone operation. This receptacle also permits using the full output of the supply to power other equipment when the transmitter is not operating. Wide range pi-network output handles virtually any antenna without separate antenna tuner. Break-in keying is clean and crisp. With tubes, less crystals and key.

No. 240-181-1... Kit..... Amateur Net \$54.95

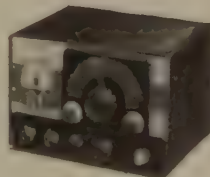
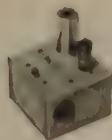
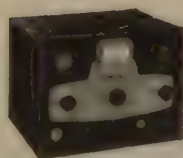
TECH AMPLIFIER/SCREEN MODULATOR—Designed to provide phone operation on the “Adventurer”. High gain—use with either crystal or dynamic microphones. Simple installation—only minor wiring changes necessary in “Adventurer”. With tubes.

No. 250-40... Kit..... Amateur Net \$12.25

“NAVIGATOR” TRANSMITTER EXCITER—This compact, flexible CW transmitter has enough RF power to excite most high powered final amplifiers on CW and AM. Instant bandswitching 160 through 10 meters. Highly stable, built-in VFO is temperature-compensated and voltage regulated—may also be operated crystal control. Timed sequence keying—effectively TVI suppressed. Pi-network antenna load matching from 50 to 600 ohms. With tubes, less crystals and key.

No. 240-126-1... Kit..... Amateur Net \$149.50

No. 240-126-2... Wired and tested..... Amateur Net \$199.50



If you're in New York during the Convention—don't forget the special Single Sideband Dinner on March 25th at the Hotel New Yorker.



E. F. Johnson Company

2903 SECOND AVENUE S.W. • WASECA, MINNESOTA

For further information, check number 24 on page 126.

DX-pedition FP8

by CHARLES M. O'BRIEN, FP8AS/W2EQJ

48 Prospect Ave., Westwood, N. J.

Sooner or later the average ham, bedeviled by QRM and cursed with the most mediocre of all call letters, dreams of *being DX!* Me, plain old W2EQS, this vision has plagued for years. To think that the same low-power rig that puts me in a class with thousands of obscure hams, simply transplanted to a rare island somewhere with the addition of exotic call letters, would make me sought after by the world! Ah, what bliss!

Larry and Joe returned from a DX-Vacation jaunt to inject the specific virus which was to feed on this chronic malaise and bring it to the acute stage. It was called *FP8*. A place not too far away—close enough that I might not have to desert my family to join the merchant marines or the Foreign Legion, all for the glory of amateur radio! I might be able to keep my job, my house and even my car, with careful planning. My wife should be overjoyed. Now, to find another ham with a similar spirit of adventure.

Thru the grapevine Ed, W2HTI contacted me. He suffered from a similar ambition and soon a pact was made.

No place is rare if it can be reached easily. *FP8*, St. Pierre is only 160 miles northeast of Nova Scotia. Why hasn't there been more *FP8* activity? We learned that quite a few hams had been licensed by the St. Pierre government but few of them reached the place and got on the air.

The islands of St. Pierre and Miquelon are 17 miles off the southernmost point of Newfoundland. The entire area embraces 93 square miles, with a total population of 4600. 340 live in the Capital town of St. Pierre. Apparently very little is known of these islands by most hams as many questions were asked of us ("What part of Africa or the Indian Ocean are you in?")

The port of St. Pierre is extremely busy. Its multitude of fishing boats and multi-masted freighters utilize both engines and sails. Many

Radio St. Pierre, the islands' broadcast station.



Harbour scene — St. Pierre. Cruiser is FP8AP's "Atta Boy".



ish Basque fishermen here speak only the que language. A knowledge of French is of endous aid but if you don't speak or understand it you can get by as a goodly number the St. Pierre's understand English. The ple are extremely friendly and hospitable. wo boats sail between North Sydney, Nova tia, and the island of St. Pierre. Neither a regular schedule. Main payload is cargo, tourists; nearly everything on St. Pierre st be imported. Authentic sources for accurate, detailed information revealed this: one these boats sails about every seven or ten as. With such a schedule, where does that ve a couple of fellows with a two-week ation? If we should be lucky enough to ch the outgoing boat in time, we still might stuck on St. Pierre. Our dream picture ted looking a little fuzzy around the edges. We could hope. Ed contacted friends in the ritime and Cape Breton Nets who would p an eye on boat movements. Marshall en, VEIMK had a view of the North ney harbor, so he could keep watch on the boats, the *Miquelon* and the *Langlade*. Word finally came thru that the *Miquelon* d definitely be sailing on Monday or Tuesday, September 9 or 10, so if we arrived day there would be plenty of time to spare. We left Friday the 6th, motoring straight i with no sleep, stopping only briefly for d and gas.

Two very groggy hams arrived at the dock urday night only to see the *Miquelon* on way to St. Pierre without us. Frantic arm- ing and hollering failed to bring them back. —ugh! Utter dejection! Bitter woe! With what was left of our determination we tacted VEIMK, who got us in touch with adian National Railways. We *could* still to St. Pierre, but instead of the originally- nned 160-mile boat trip, we'd have to travel r 700 miles via boat, train, taxi and again boat. Never say die! After coming this far were determined not to turn back.

Via Newfoundland

Our new route would take us via steamer Port-Aux-Basques, Newfoundland. Then by n on a giant semi-circle from southwest to

north central to southeast, a rugged and beautiful trip on the country's only cross-country railway.

Sunday night we caught the steamer to cross the Cabot Straight. Who should be the Purser and Sparks but old VOIAW (ex-VOIW) who I contacted many times 22 years ago but now had the pleasure of meeting in person. This pleasant surprise gave us a lift.

Rain had begun falling Saturday night and increased steadily, turning into a full-fledged nor'easter which didn't let up 'til late Tuesday afternoon.

Rock-bound, craggy and barren, the tiny harbor of Port-Aux-Basques greeted us Monday morning. Then the long rail journey began.

The first 400 miles took 22 hours. Up to Corner Brook, then circling northeast across the continent — Springdale, Grand Falls, Bishops Falls. Rain, wind, fog and miles of desolate country. Heavy pine growth in places, stunted pine or nothing but rocks and barren hills in others. Plentiful lakes fed by roaring rivers and streams, filled to capacity by the constant rain. Our vision of hamming on St. Pierre was becoming a little brighter when we ran into a landslide which covered the tracks ahead. Another wait while the work crew cleared them.

At Gander a huge trans-Atlantic plane took off so close overhead we thought the train would disintegrate from the vibration. But it held together, soon winding its way along again, now south toward the Avalon Peninsula.

At 7 a.m. the conductor gave us the call for Goobies—a tiny station where even this train stops only on signal. Groggily we debarked. The rain, still with us, beat a steady tattoo on numb backs as we unloaded 8 heavy pieces from the baggage car. Few of the 25 population of Goobies were out to meet us this soggy morning.

Luckily there was a taxi at the station. But when we told him we wanted to go 150 miles down the Burin Peninsula, he balked. Only one road wound down this protuberance and it was in bad condition from the rains. For \$6 we talked him into taking us to Swift Current,

Continued on page 104

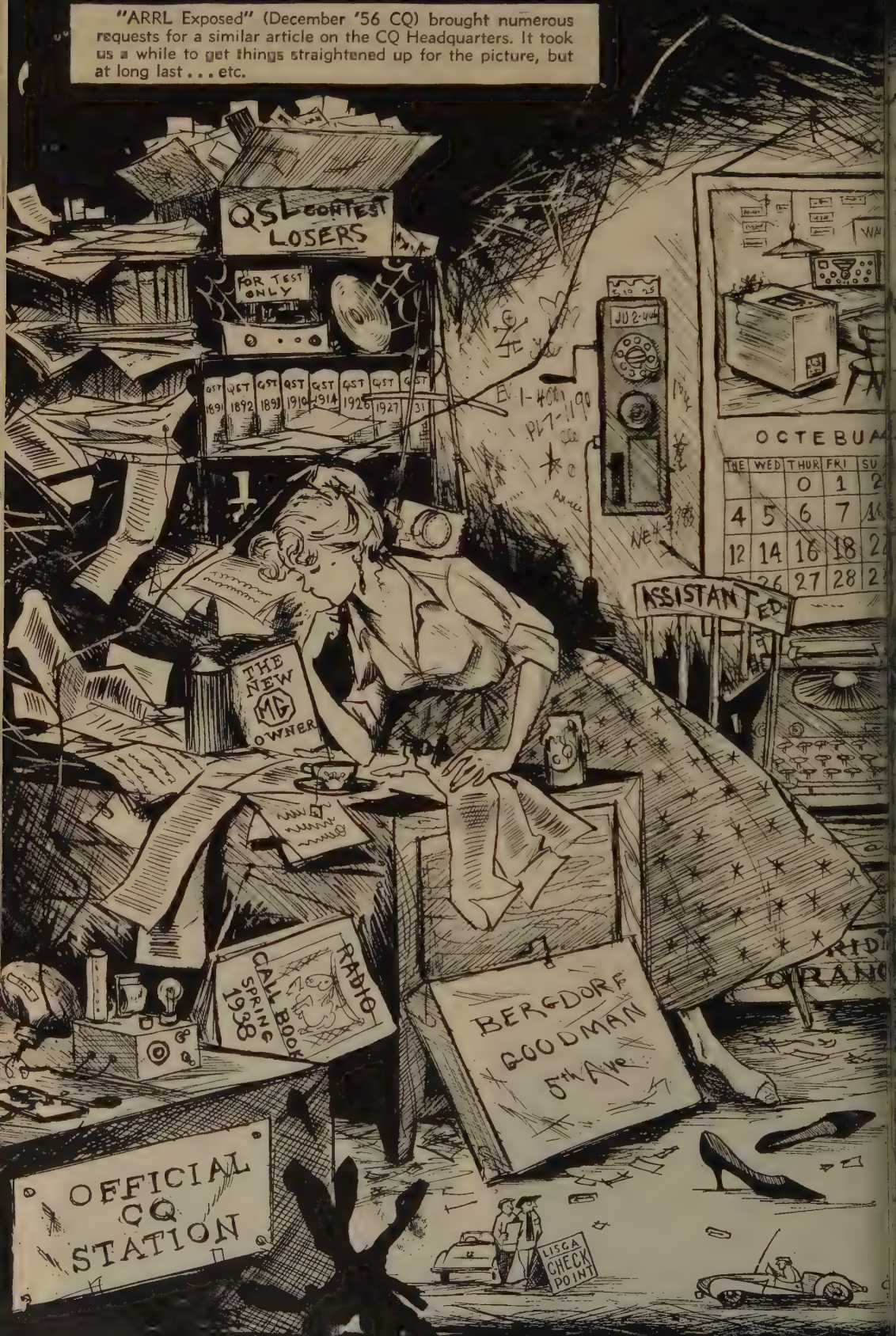
Roblot, FPBAP is the only active ham on the island



The rugged coastline of St. Pierre.



"ARRL Exposed" (December '56 CQ) brought numerous requests for a similar article on the CQ Headquarters. It took us a while to get things straightened up for the picture, but at long last ... etc.



OUR MOTTO

NEXT WEEK WE'VE GOT
TO GET ORGANISED!

ASCHEN

YORK
EAN

FILE AND
FURGET.

FORGET

A close-up photograph of several pieces of wood or bark. The word "TICK" is written in white, hand-painted capital letters on three different pieces of the wood. The wood has a rough, textured surface with visible grain and some dark, possibly charred or stained areas. The lighting is somewhat dim, creating a moody atmosphere.



Fig 2

A Transmitter Tuning Meter

W. B. Bernard, CDR, ED, USN, K6EUS

Navy dept., Wash. 25, D.C.

Power pentodes and tetrodes are widely used as output amplifiers in amateur transmitters. The high power sensitivity of these tubes makes it possible to drive them with a low power driver system. This low power driver may be simple and therefore economical. Also because it is low powered it is less likely to cause TVI and other interferences than is a high power driver system. With all these advantages there are some disadvantages which must be accepted. The one of most importance is the ease with which such tubes may be damaged if they are not operated properly. Contributing to this difficulty is the small change in plate current which occurs between an overloaded condition which is likely to cause overheating of the screen and an overloaded condition which will cause overheating of the plate.

A glance at the characteristic curves in the tube handbook will show that the screen current of the output tube rises steeply if the plate voltage of the tube goes much below the screen voltage. This situation will occur once each cycle of the transmitted frequency if the voltage swing of the plate tank is too great. This high voltage swing results from too light a loading of the tank. If the screen grid is furnished its current from the plate supply through a high resistance the screen dissipation, which is limited to a maximum of $\frac{E^2}{4R}$ where E is the

supply voltage and R is the value of the dropping resistor, may be less than the maximum permissible screen dissipation of the tube in which case we need not worry about burning up the screen. If instead of a high voltage supply with a high value dropping resistor we have a low voltage supply with little or no series resistance $E^2/4R$ can easily become great enough

to melt down the screen leaving us with a poor grade triode which we really don't want.

Tuning up is a process that is very dangerous since during most of the process there is an insufficient load on the plate tank. This danger can be minimized by tuning up and loading with reduced grid drive and/or screen voltage, but we are left with the basic difficulty of recognizing correct loading as mentioned in the first paragraph. The number of amateurs complaining of the short life of certain type tubes attests to the difficulties of correct operation.

The answer to the problem is some type of an indicator which tells, with more accuracy than the plate current meter, the actual operating conditions in the plate circuit. A meter which measures the peak radio frequency voltage in the plate circuit will give us the information which we need. Such an instrument has been used in commercial transmitters for years but has rarely been adopted by the amateur fraternity.

Perhaps in the past the cost and the bulk of the necessary components acted as a deterrent to its wider adoption but the wide availability of high voltage components designed for television receiver service has removed these objections.

Fig. 1 shows the circuit of a plate voltmeter for use in amateur transmitters. The components which must be added to make this circuit are small enough that they may be installed in all but the smallest transmitters. Fig. 2 shows the coupling capacitor, rectifier tube and multiplier resistor for the plate voltmeter installed in the author's transmitter.

Returning to fig. 1 the 1X2A tube and the 20KV 500 μ fd capacitor are easily secured in inexpensive television receiver parts. The meter must give full scale deflection with 1 ma or less since the 1X2A is limited to 1 ma average current. If the transmitter already has a DO

ter other than the plate current meter a 1 ma meter may be substituted for this meter and a switch with suitable shunts can be connected to use the meter for the original function(s) of the plate voltmeter circuit. The multiplier resistor string should consist of a number of resistors in order to limit the

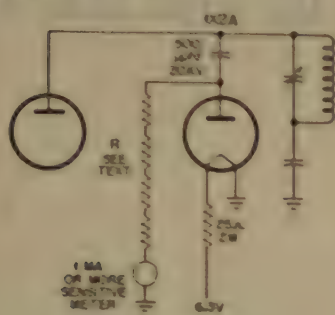


Fig 1

voltage which is impressed across each individual resistor. At least the top two resistors should be of the deposited carbon type since the composition resistors have a very small distance element inside a large phenolic case. When such resistors are subjected to high r-f frequency voltages they tend to overheat and burst. The value of the total resistance string is equal to the full scale voltage reading divided by the current required for full scale deflection of the meter movement. For instance if the meter is to read 1000 volts and has a sensitivity of 1 ma (.001 A) the resistance needed is $1000/.001$ or 1,000,000 ohms (megohm). It is convenient to have the meter read from 1.25 to 1.33 the DC plate supply voltage except in the case of a plate modulated amplifier in which case it should read about 2 times the plate supply voltage.

The author's transmitter has four 807's in the final amplifier designed to run at 750 volts and 400 ma for c.w. The curves shown were taken at reduced screen voltage to prevent damage to the tubes during the data taking, however if the voltages and currents shown are multiplied by two they will be very close to those obtained under full power conditions. Fig. 3a shows the plate current and plate voltage as the final tank is turned through resonance with no load coupled into the circuit. It can be seen that at resonance the r-f plate voltage rises to a very high value. Had the screen voltage not been reduced the plate voltage would have exceeded the plate supply voltage and the screen current and the screen dissipation would have been far in excess of the allowable ratings. Fig. 3b shows the plate current and the plate voltage as the plate tank is tuned through resonance with the tank heavily

loaded. The much greater sharpness of the plate voltage rise compared to the plate current dip is still evident although the transmitter is loaded more heavily than is desirable. Although there is not much plate current change between a plate tuning dial reading of 8 and 8.5 the plate voltage curve shows that the r-f plate voltage changes 25%, therefore the output power may be down by more than 40% with little indication by the plate current meter. Since the DC input has not changed much and the r-f output has dropped 40% there must be much more power being dissipated in the final amplifier plate(s).

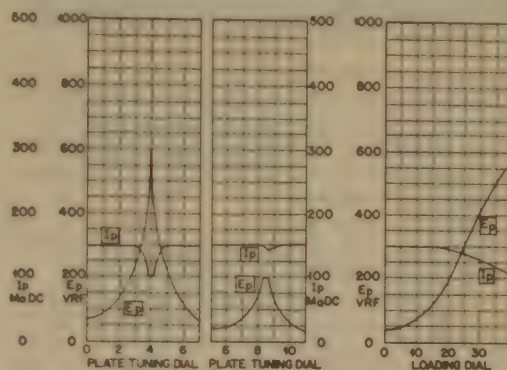


Fig 3(a) (b)

Fig 4

Fig. 4 is a plot of the plate current and the plate voltage as the loading on the plate tank is varied with the tank being maintained at resonance. As the loading dial numbers increase the loading on the tank is decreased. We may consider that under the reduced screen voltage condition a 250 volt peak plate swing indicates proper loading on this amplifier. A loading which gives 200 volts plate swing under these conditions will give excessive plate dissipation under full power operation while a loading which gives 300 volts plate swing under these conditions will result in excessive screen dissipation under full power operation. This 100 volts difference on the voltmeter results in the same needle movement as 50 ma difference in plate current, however the same change in loading which caused the 100 volts change in plate voltage caused only 5 ma change in plate current thus the plate voltage meter is 10 times as sensitive an indicator of operating conditions as is the plate current meter.

In addition to being almost essential for the determination of proper loading of final amplifiers the r-f plate voltage meter is also useful for the determination of linearity of linear amplifiers and the modulation capabilities of modulated amplifiers. To sum up, the radio frequency plate voltmeter is more than a convenience. Once you have become accustomed to using it you will wonder how you got along without it in the past.

Traffic Man's Keying For The DX-100

Robert A. Thomason, W4SUD

626 Eastwood Drive
Owensboro, Kentucky

The keying system in your DX-100 is quite adequate, if you never use it on CW. If you are active on CW, take pride in emitting a clean signal and want your transmitter suitable for full break-in, these simple modifications may be your answer.

The DX-100 original circuit keys the cathodes of the 6AU6 oscillator and 12BY7 buffer. Most agree an oscillator cannot be keyed without either clicks or chirps. The DX-100 keying is shaped for clicks. However, oscillator keying is essential for break-in operation. The answer of course is some type of differential keying, that is, keying the oscillator a few milliseconds before the amplifier and break the amplifier a few milliseconds before the oscillator. Thus the clicks generated by the oscillator are not transmitted. The step by step instructions to follow will convert your DX-100 keying to a very effective differential keying system using two popular surplus keying relays (found in the BC-645). Other relays can be used as described later.

The advantages of grid block keying over cathode keying are numerous. One of the more important being ease of shaping the keying characteristics. These instructions also include grid block keying of the 12BY7 stage.

It may be of interest to some that these modifications only require drilling two 5/32" holes in the chassis.

Details

The relays used were removed from a junk BC-645 and may be recognized from the photograph. They have a standard five prong base and a metal cover. Mount the relays on a small sub-chassis and wire as shown in *fig. 1*. The chassis is made by bending a piece of .051" aluminum 1 5/8" by 8". (See *fig. 3*.) Mount in the high voltage power supply section as shown in the photograph, using two 6-32 by 3/8" machine screws.

Refer to pictorial 6 in your Heathkit assembly instructions.

Disconnect the blue wire going to terminal 8 on switch N. (Phone-CW switch.) Splice

this blue wire to the blue wire from the relay chassis.

Connect the green wire from the relay chassis to terminal 8 of switch N.

Connect the red wire from the relay chassis to the front terminal of the strip mounted near the 12BY7 socket (L.V. B+).

Refer to pictorial 7 and *fig. 2*. Mount a three lug terminal strip (center lug grounded) behind the 12BY7 socket using the screw holding the loading capacitor. Connect a 100K 1/2-watt resistor from the lower lug to terminal 2 of the 12BY7. Connect a 10K 1/2-watt resistor between the top and lower lugs. By-pass the lower lug to ground (center lug) with a .005 mfd ceramic capacitor. Connect the lower lug (junction of 10K and 100K resistors) to terminal 7 (tie point) of the 5V4 socket. Connect the yellow wire from the relay chassis to the top lug. Dress all wires close to the chassis.

Refer to pictorial 5. Connect a 22K 1/2-watt resistor between pins 1 and 7 (tie points) of the 5V4 socket. Connect pin 1 of the 5V4 socket to lug 1 of terminal DD (grid block voltage). Connect a .15 mfd capacitor from pin 7 of the 5V4 socket and a convenient ground point. This capacitor shapes the amplifier grid blocking voltage and therefore determines the keying characteristics. For example, a .25 mfd would give softer keying. The one suggested appears to be a good choice.

Testing

Measure the relay current by plugging a multi-meter into the key jack. A reading between 9 and 11 ma. is satisfactory. If this current is too high both relays close at the same time. If it is too low K_2 is not closing long enough or fails to close at all. Therefore it is important the relay current be within the above limits. The current can be varied by changing R_1 in *fig. 1*.

Now you are ready for an "on the air" check. Select a local station or one that receives you strongly. It is difficult to check for clicks in your own receiver, due to the clicks caused by key contact arcing. (Only heard

few hundred feet.) While sending a test signal, ask the receiving operator to adjust his BFO to zero beat and listen for clicks. This is the acid test which only the best will pass. When checking for chirps the BFO should be adjusted near zero beat. A small frequency change will thus be a larger percentage of audio frequency change.

Other Relays

If other relays are used, some cut and try will be necessary. The relays used have a coil resistance of 2200 ohms. C_1 and C_2 are approximately inversely proportional, and R_1 and R_2 are directly proportional to the coil resistance. For example, if the coil resistance were 4500 ohms the values are as follows:

C_1 —1 mfd

C_2 —.1 mfd

R_1 —300 ohms

R_2 —4500 ohms (equal coil resistances)

R_1 and R_2 form a voltage divider for the relay voltage. Values should be selected which will give a key down voltage at point A of about three times that required to operate the relay used. I would suggest R_1 be variable. Then while making the "on the air" test outlined above adjust R_1 until the clicks have disappeared and at the same time there is positive closure of K_1 .

Trouble Shooting

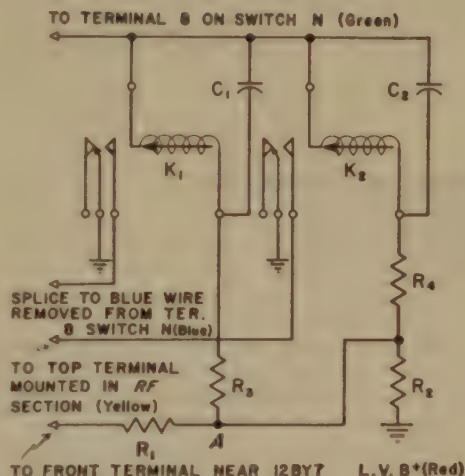
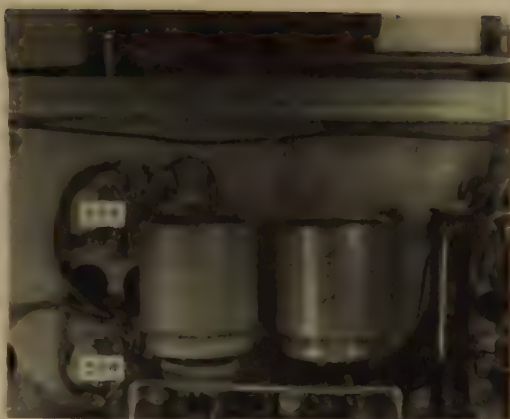
If trouble is experienced with clicks, short the oscillator relay contacts. This will key the amplifier grid block voltage only and the keying should be very clean. If not, recheck the grid block modifications.

After amplifier keying only is operating without clicks, remove the short from the oscillator contacts. The oscillator relay K_1 keys out because it operates at a higher voltage (lower series resistances). It also drops out last since C_1 is much larger than C_2 . K_1 will not drop out until C_1 has discharged through the coil. Determine if the clicks occur on make or break. A click on make indicates both relays are keying almost at the same time, and is corrected by increasing the value of R_1 . A click on break indicates both relays are dropping out nearly the same time. This is corrected by decreasing the value of C_1 . R_1 should be adjusted for optimum as these changes are made.

Full Break-in

The back contacts of the oscillator relay could be brought out pin 5 of the remote control socket and used to desensitize your receiver. This is done by adding resistance in series with the rf gain. During key up K_1 shorts its resistance. The NC-300 used here already has this connection, so it can be easily added to others. A T-R switch or separate receiving antenna completes the system.

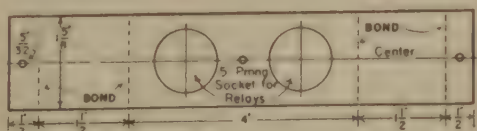
It is a pleasure to operate and you will be proud of the reports from the most critical listener.



[Fig. 1]



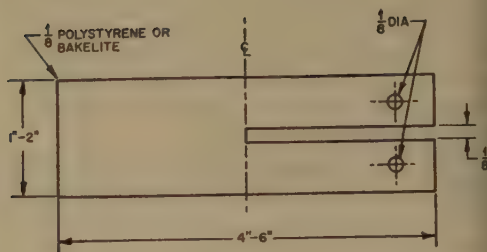
[Fig. 2]



[Fig. 3]

Little but . . .

OH My!



(A)



(B)

(a) Make coil forms as shown, cut for tight fit, use $\frac{1}{8}$ " Polystyrene or bakelite.

(b) Assembling the coil forms.

Leonard E. Geisler, AES

Chief Engineer,
Japan Electronic Trading Co.,
CPO Box 1556, Tokyo, Japan

Just want to get the facts? That's all, just the facts, man? Stick with me then, and you'll find 'em all revealed in this startling exposé of how skrunched beams are born!

Our two amateurs—JA1ALZ and JA2MN/1—both, just now, very active on the Japanese 40 meter band were faced with a problem. JA2MN has a room on the premises—he doubles as night watchman—and the poor guy's *got* to have a ham outlet. How to get a $\lambda/2$ doublet hung on the roof of our store? Says you, what's so difficult about this? Our shop is approximately square, about 26' x 26' and rented by us to boot. The second floor is taken up with another company and we don't like to be forever galloping up and down to prune the sky-hook, providing we ever get one up. The boys asked me "doshi ma shoka?" (Wot'll we do?) "Mattetei," (wait) sez I.

Much head scratching, slip-stick sliding, coffee slurping and hard skull-drudgery later I come up with the proposal that hanging up the driven element of a foreshortened beam might do. "This," the boys say, "is pure genius." "Ha!" says I to myself, "these lads don't know what Edison said about genius!" We set to work. . .

Here is the straight poop: Any $\lambda/2$ doublet, regardless of feed system, is bound to do most of the real radiation from the center portion, roughly a chunk of radiator $\lambda/4$ long. Looking

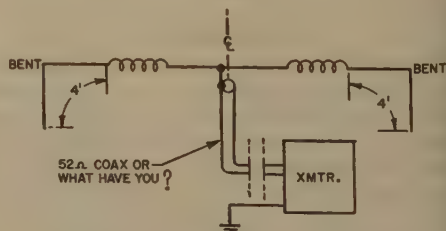


(A)

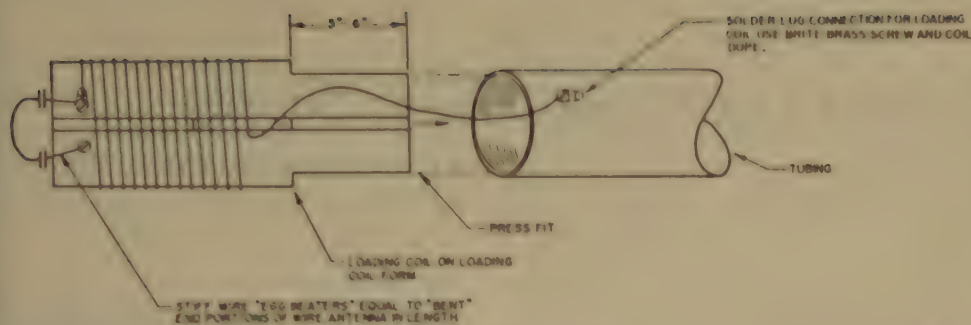


(B)

Winding. Note the form locks with the pull, making a secure assembly without nails, hooks or Scotch tape.



Electrical appearance of the "SS".



Suggested assembly for beams.

in another way, you radiate most of your antenna current from the said center portion of the wire, the voltage meanwhile, isn't doing much out near the ends of the wire, except maintain proper phase relationships toward the center, working, portion. The voltage doesn't radiate, if you follow me. (If you don't see the Antenna Handbook!) How to shorten the antenna and still keep voltage & current 90° out of phase? Simple. Either chop off some of the ends and fold 'em over to provide capacitive reactance or insert loading coils at the $\lambda/8$ wave points and leave a little wire for a capacity at the ends. Simple?

Now, any capacitor and inductance, within reasonable limits, will resonate when wired in series and hooked to a generator. They will present a near short-circuit to the generator at some certain resonant frequency. The X_c and X_L show up as so many ohms, through which power is being dissipated. In the case of the doublet antenna this reactive remainder is called "radiation resistance" and the object of your hectic activity, when tuning up the line & transmitter is to match this radiation resistance as near perfectly as possible, not so? K, put the series-resonant antenna loading to work. See what happens? The antenna still looks like a very low resistance to the line and transmitter and you still radiate!

Yes. The coil data. Well, there really isn't any. That's right! Take your $\lambda/2$ doublet and measure off exactly an electrical $\lambda/8$ each side of the physical center. Don't cut the wire! not it, or something. Measure this $\lambda/8$ at the center of the band you plan working most on. Then take any reasonable size of coil form, or something like those shown in the figure—you can whomp these up in a half-hour or so—and wind the remaining, or running, ends of the antenna halves on these forms. Stop winding when you've about 4' left over. Make sure you have the same number of turns on each form, wound in the same direction—series winding—to preserve phase relations, remember? Take the remaining 4' of wire on each end and bend as shown, or any way to suit your

installation, attaching the proper quantity of insulators. I do not recommend your running the end sections straight out as the antenna then becomes sharply resonant. Now, all that's left to do, assuming you're working on your present antenna, is to check the loading and SWR. Yoiks! You're on the air!

You'll find very little difference at the transmitter end of this arrangement, however, due to the slightly broader radiation angles, you'll find stations coming in almost on "beam end" (and you may not need the rotary beam you were dreaming of impressing the neighbors with). As far as getting out is concerned, our boys formerly used a $\lambda/4$ vertical aluminum mast for a radiator on 40. DX was conspicuous by its absence, even locals gave our boys 3-3-5 reports. We put up the "Skrunched Squirrel" and they now consistently get 5-5-9's on long hauls, 40 over 9's on locals. This, I believe, is the pudding's proof!

If you've a space problem, why not give this system a try? Work with a test length of wire on the ground, using your GDO for a signal source and your receiver's S meter for measurements. You can also tune up a Gamma match on the finished antenna on the ground—incidentally, this system is a natural for Gamma matching! You may find this type of sky-hook has a slightly higher SWR than a full $\lambda/2$ doublet due to the somewhat reactive characteristic of the series LC loading circuit. We find, however, that it does darned well for our boy's 100 kc wide 40 meter band.

You might note the lack of inductance formulae. You won't need any, believe me. This system works without all that fancy stuff!

If you would like to alleviate the sharpness of your radiator, I suggest you use large diameter tubing, say 3" or so, and cut the central portion to 0.1λ each side of center instead of the $\lambda/8$. Chop off loading coils you've made according to this system, stick 'em into the ends of the tubing—see sketch—attach some stiff wire egg-beaters on the ends—Lo! You have the makings of the rotary!

Getting ideas?

A Short Duty-Cycle Power Supply

Design considerations for 5B applications

W. G. Rommel, W6EHY

8508 Trask Avenue
Playa Del Rey, California

During the war, many hams were engaged in work that put to use their special talents. Hams were found in communications, equipment installation, engineering and all phases of radar. As we all know, if you let a Ham play with some item of equipment for any length of time, he will do one of two things; improve the item or make a note of the good features for future use in his own station.

The writer, having been exposed to all types of equipment, is no different from any other Brass-pounder, and many notes were made for future use and consideration. One idea possessed him for a long time, and sooner or later something had to be done!

About eight months ago, time from the busy chore of living and eating was allotted, and construction started on a unit to prove the idea. Very few articles have been written on the possibilities of using the small and compact power supplies that are used in radar transmitters. I can hear the radar engineers and old-timers start at this point to cry, "Time constant," "Duty cycle," and "Pulse duration," etc.; however, let's calm down and take a slower look at the complete picture. A few of the boys have no doubt thought this thing over and passed on. In most cases the rig was to be used for CW or Phone, and the "Duty cycle" would throw the whole thing out the window. With the ever increasing use of Single Side Band and its short duty cycle, the picture changes back to a more favorable one. (CW men QRX—there is more for you later.)

The following will be in as simple form as possible with a minimum of mathematics, for it is hoped that all types of readers will enjoy what is to come.

The basic principle used in radar power supplies is to provide a burst of very high power and then rest before the next burst is required. To supply the burst power, a condenser is charged and then discharged as short demands are necessary. To get an idea of how this works, take a filter condenser and charge it with voltage from a small power supply. Now remove the condenser from said power supply and

short the condenser leads. Real noisy, isn't it? Also it burns the lead wires at the point of discharge. This shows that the condenser has a new and useful power, which we are going to put to work. Really what has happened is that the unit has stored the full voltage of your power supply and holds it waiting for your next move. Let us say you have the condenser connected to your power supply for one second and your supply will deliver 100 mills. During the time connected, the supply was pumping in voltage at the rate of 100 mills, until the condenser reaches the full voltage of the supply output, at which time the current drops to zero and the capacitor rides on the line. When we remove the condenser and short the leads, we are using this stored power, but we are using it completely in a fraction of a second, and therefore, have available the same voltage as the power supply but many times the original 100 mills, which took one second to charge the capacitor. This is the reason for the loud noise and burning of the wire ends that we noted in our first experiment. The difference between the one second charging time and the fraction of a second discharge time is the "Time constant" we hear so much about.

If we say that we used 100 mills at 1000 volts to charge the condenser and when discharging we had 1000 volts at 1 amp., we seem to have increased our wattage considerably; charging 100 watts, discharging 1000 watts. Now we know that we don't get anything for nothing; the joker in the picture is time. If the condenser was a tank and we were filling the tank with water from a small pipe, it would take a certain time; once the tank is full, we could get all the water at once by removing the bottom. The same thing is happening in the condenser—on discharge, you are removing the bottom!

Now that we see how it's done, let's take a look at a way to use the idea. In Single Side Band Transmitter Final Amplifiers, the heavy load is only required during speech. The human voice during a conversation is a series of short bursts of sounds over a rather narrow range of frequency. The duration of any one of these sound bursts is a very short time. We now begin to see the comparison between the human voice and a radar transmitter. The average linear amplifier used will draw some fixed plate

rent, called idling current. This power is only a small percentage of the power necessary for the speech bursts as they pass through the amplifier.

It should not be hard for anyone to visualize the size and cost of a power supply to run a 1 KW AM Transmitter. Now look at the cost and size of a power supply to operate a 300 watt AM transmitter. Boy! some difference, eh? What we propose to do is use the 300 Watt cost and size, but still get the 1 KW signal on the air. There has been reams of information written on final amplifiers of all types. We will not go into this subject, but confine ourselves to a power supply which will supply power for the final amplifier of your choice.

From months of experimental work, a guide has been developed that will be used for the

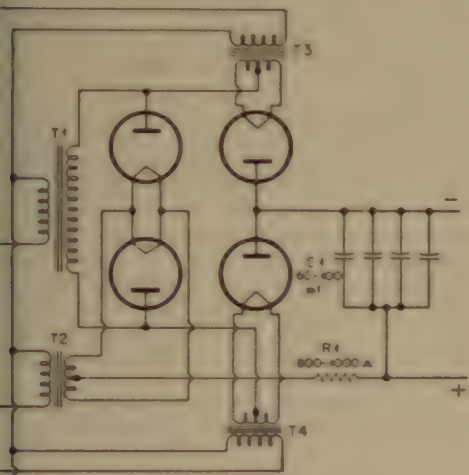
storage tank) that we were talking about in the first part of our discussion. Here is the heart and lungs of the whole system! The value chosen boils down to the more the merrier, within reason. Experimental data shows that a minimum of 25 mfd's is necessary for proper results and 100 mfd's will do a wonderful job on a 1 KW Final Amplifier! This is not as rough as it sounds with all the fine capacitors available on the surplus market today. Series and parallel connection using lower voltage capacitors is acceptable and works very well as long as the final rating of the stack fits the power supply voltage. Heavy filter chokes are not required, as a matter of fact, no filter chokes were used at all in the experimental rig tested. No bleeder resistors were used, as this is taken care of by the idling current drawn by the amplifier.

There is one additional part necessary. This item is a *must* and protects the rectifiers. There is a low value of resistance, which is connected between the rectifiers and the condenser bank. This resistor limits the current to the condenser when the supply is first turned on. A value of between 800 and 1000 ohms will be ample and a wattage equal to your plate voltage times twice your idling current, will run quite happily.

Assuming that you now have the unit wired and ready for business, let's see how we use this rascal. With your Exciter, Final and Power Supply all hooked up and ready for use, you should place some form of dropping resistor or variac in the primary of your plate transformer while tuning up. This dropping element should reduce your plate voltage to one half of its normal value. After you have tuned the complete rig up for best loading and drive, remove the carrier and introduce audio through the system as a check to see that the final plate meter kicks up. We are not interested at the moment as to how high the meter kicks up, just so we are getting the proper action under speech bursts. Remove your dropping device from the primary of your plate transformer and stand back! You have a real monster on your hands! The idling current should be normal as originally figured and the plate voltage will be a little above your original figures. This is normal and you are ready to bellow into the microphone. Your voice peaks and power output will be of the same magnitude as if you were using a large full size power supply.

All that remains is a few "Don'ts" which are peculiar to this type of supply. By looking at the diagram, you will see that unless the final bleed is working, the supply will reach full peak transformer voltage and stay there. Some means of discharging the condenser bank must be used before working around the final or supply. Do not under any condition try to short the condenser with wire, screw drivers, etc; this will

[Continued on page 98]



Schematic

selection of components. We start with the Plate Transformer. First determine the idling current and plate voltage that your linear amplifier will require with no voice signal. The idling current should be approximately 20% of the peak current drawn with voice bursts. Now, consult the idling current figure that you have selected and use this value along with your required plate voltage for the selection of your plate transformer. You will find your unit about one-half the size of a transformer that would be required for AM or CW for the same power. The rectifier tubes used may also be selected on the basis of having to carry only the double idling current figure, however the voltage rating must be for the full voltage of the supply as is standard for all systems. Filament transformers are selected as for any standard power supply. Now we have the Plate Transformer, Rectifiers and Filament Transformer.

Now we come to the most important part of the whole system. The Filter Condenser (our

Designing QSL's At Home—part II

by F. D. WHITMORE, W2AAA

223 W. Holly Ave., Pitman, N. J.

Halftones are in-between tones lying somewhere between the solid color and white. If black is the solid, any and all gray shades falling between solid black and white are halftones. In process color work (three and four color printing where one color falls over another) complimentary colors occur. The shades of these new colors vary with the amounts of basic inks reaching the paper.

Screening controls the amount of each color applied and enables halftone printing. Original artwork in black-and-white or color is photographed through a fine screen. The screen consists of two pieces of optical flat glass cemented together. Each piece contains black parallel lines. The two pieces of glass are cemented together so the lines crossed at right angles. Thus the intersecting lines form little square openings. For printing on smooth stock, a

screen containing 120 or 133 vertical and horizontal lines per inch is used. A 120 line screen forms 14,400 little apertures per square inch. These apertures form the printing dots of the halftone.

Placed the correct distance before the photographic plate of the camera, the shadows cast by the crossing screen lines are not sharp; they are intentionally "out-of-focus." Because of the soft edges of the screen-line shadows, the tiny beams of light passing through the screen apertures have soft edges too. The brightest parts are their centers and the brightness diminishes as their edges merge with the screen shadows. Tiny discs of light therefore reach the photographic plate brightest in the centers, dimmer at the edges.

The light passing through the screen to the photographic plate is light reflected by the art

Fig. 1 (a) Halftone (b) Portion of halftone enlarged to show dots.



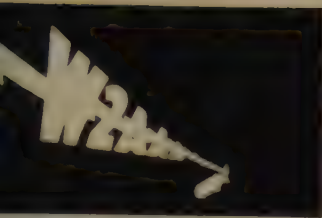


Fig. 3. (a) Blue-plate linecut



(b) Black-plate halftone



(c) Red-plate linecut

work, not direct light from the arc lights. If the copy has variation of tone, the light reflected from it will vary in intensity; these variations will be in accordance with the lightness or darkness of the copy tones. The less light, the smaller the dot on the negative; the greater the light, the larger the dot. The size of the dots controls the amount of ink reaching the paper, and produces the illusion of shading.

The variable halftone dots are illustrated by Figure 1. In (a) we see the gamut of tones from light to dark that form the dog picture. When under a powerful magnifying glass, however, these shades are not smooth tones; instead, they are dots of ink spread out to form the light areas and congested to produce the dark portions.

Examination of Figure 1a shows a small square drawn around one of the dog's eyes. This area magnified about ten times is Figure 1b. Here we see illustrated the printing technique of halftones by screening. The lightest part of the dog's eye shows small scattered dots of ink. Dark areas of the eye show high ink concentration; in fact, it is so concentrated as to cause the paper stock to appear as small white dots. But note this: neither the light areas nor the dark areas of halftones are solid white or solid black; white paper stock shows in the black areas, and fine black dots show in the whites. The fineness of these dots

cause the eye to see these areas as black and white.

Halftones introduce realism to artwork. Gradual fading of dark tones to light ones and vice versa creates third dimension or depth in the art and separates one plane from another. The eye automatically seeks highlights (light or bright areas) in a picture. From these highlights the eye moves via the deepening tones to the dark color. This treatment of artwork keeps foreground objects clear and distinct while distant ones dim and fade. Also, this same method makes spheres where formerly there were circles. See Figure 2.

Combination Halftone and Linecut Plates

If tone values are near enough alike, a printing plate may contain both linecut and halftone portions. However, only experience can guide this choice, so you should create separate art for your halftones and linecuts. Figure 12a shows a combined plate having both halftone and linecut portions. This is possible because the color ink for each will be the same; and also because the tone values of both are very close.

The easiest halftones to produce are photographs. A camera automatically records variations of light from the object so it appears life-like on the positive print. This is true



Fig. 4. Artist's airbrush

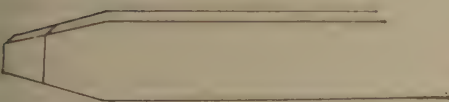


Fig. 5. Artist's pencil

Fig. 2. (a) A circle

(b) With shading, the circle becomes a sphere.

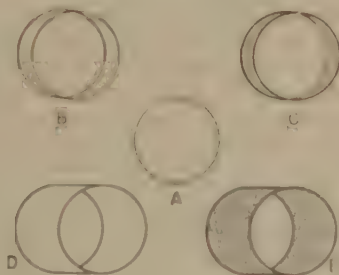


Fig. 6. (a) Circle

(b) Double circle

(c) Obtaining depth through shading.

(d) Spread circles to make cylinders.

(e) Shading emphasizes planes of cylinder.

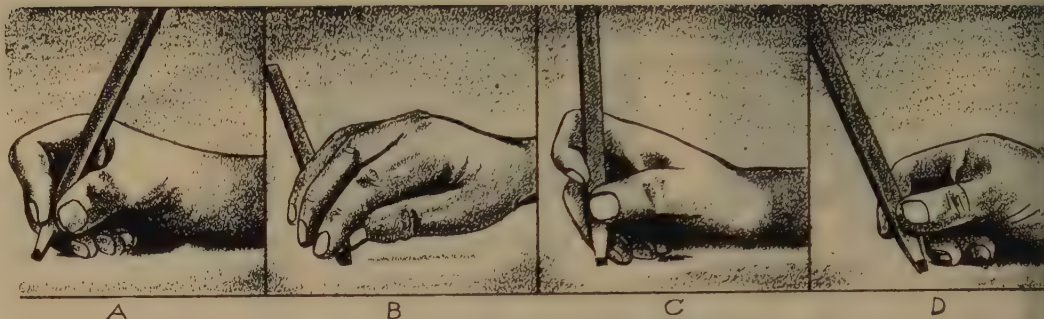


Fig. 7. (a) Normal manner of gripping pencil.

whether you "shoot" in black-and-white or color.

Producing printed QSL's from the original black-and-white print limits one to a single color: Black ink will create black-and-white cards with all the in-between tones in shades of gray; if a colored ink is used, the cards will vary from that solid color through various tints of that color to the cardstock white.

On the other hand, using a color print forces the printing into process color work. The photo-engraver has to photograph your color print three times using yellow, red and blue filters on the camera. Separate plates are made from these separate negatives. One plate prints the yellow ink; the second, the red ink; and the third, the blue ink. Sometimes a fourth plate is made for black to give extra richness to the printing.

If a photograph is your design or a part of the design, be sure it is a sharp image (in focus and not an enlargement made from a very small negative). Sharp 5" x 7" or 8" x 10" photographs are best.

Better control of printing occurs by using separate linecut plates in conjunction with the halftone plate. Brilliant deep colors reproduce from the linecut plates forming sparkling comparisons with the halftone areas which are softer.

Creating Halftone Artwork

Commercial artists create halftones with an air brush. An air brush is a miniature paint spray-gun. A hose connects it to a compressed air source, and the water dissolvent paint fills a thimble-size cup. When triggered, a fine spray shoots out confined to a small area. By control of the spray, the artist varies the concentration so the result fades smoothly from dark areas to light. See Figure 4.

Another method for creating halftone artwork is with a soft pencil. With a little practice, this second method will suffice to produce satisfactory halftone art for QSL designs. It requires only a very soft pencil and careful maneuvering. If you have access to an art supply store, obtain a soft lead pencil with flat lead. See Figure 5. In lieu of this, use either a Venus 6B or a No. 1 round lead pencil obtain-

able in stationery stores.

Figure 6 is a circle. It is a two-plane object; it has only height and width. Now let's move the compass focal point slightly to the left of the same lateral plane, and draw another circle. Our circle now appears to be a circle slightly overlapping another circle. See Figure 6b. If we heavily shade the space between the two circles at the left, and lightly shade the space between the two circles at the right we have added a third-dimension—depth. See Figure 6c. The two circles now appear as one broad band circle. Moving the focal point further to the left before drawing the second circle results in a cylinder. See Figure 6d. Shading the outside and inside with different tones emphasizes the cylinder. See Figure 6e.

This procedure is fine if all we want is a circle or variations of a circle. But what has to be done to make a ball out of the circle? We might need the sphere effect to represent the world or a portion of it?

This time let's draw two separate circles, proceeding from left to right. Let the first one stand as an example of a circle. With either the broad point artist's pencil or the No. 1 round-lead pencil start shading. Figure 7a, b, c, and d show how to hold the pencil to obtain special effects.

If you use the round-lead pencil, sharpen it to a smooth tapering point. This is best accomplished in a pencil sharpener; but it can be done with a pen-knife if the point is smoothed afterward by rubbing on the sole of your shoe.

With the soft pencil, start shading the outside third area of the second circle adjacent to the edge. Use a light stroke and the broad side of the pencil lead. See Figure 7b. Apply a medium shade to this area being shaded making the consistency as even as possible all around. See Figure 8b.

Next, in the lower third of the shaded area you've just finished, go over it once more bearing down somewhat on the pencil to make it quite black. See Figure 8c. Now slightly darken the remaining white area of the circle.

Three tones of gray now exist in the circle: very dark in the lower third, medium dark around the remaining edge, and light gray in the center. Now work over the areas where the various tones meet, darkening the abutting

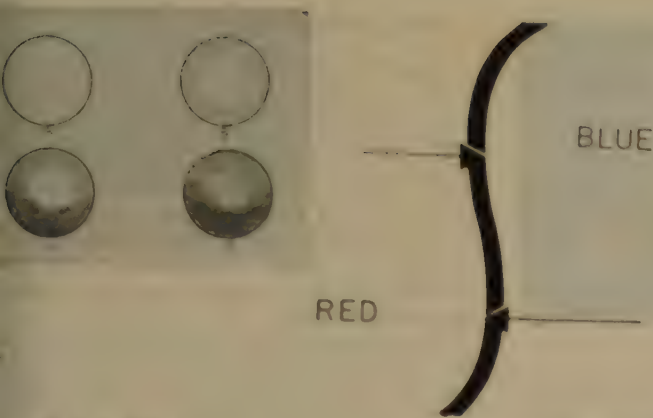


Fig. 8 (a) Circle

- (b) Beginning to shade for sphere.
- (c) Advanced shading for sphere.
- (d) Sphere complete.



Fig. 9. When color separating, work to far side of the line.

Fig. 10. Wide color overlap is suitable for poster work.

ges until one merges into the other. This completes the sphere. See Figure 8d.

The same technique of shading from outside to inside works for all other shapes that you wish to reproduce in halftone. Figure 3 illustrates both the shaded circle to form a sphere, and the general shading around the tangle of the card. The latter is evident at the top edge where it fades toward the center.

This QSL was printed from three plates on white Kromekote stock. The lightning flash is reproduced from a linecut plate. From a second linecut plate, a medium blue was applied over except for the call-letter area. A half-tone plate then applied black over blue to produce the general variations in the blue area, and to obtain the deep midnight blue portions.

Color Separation Hints

Introducing halftones into artwork is a highly refined refinement. Your artwork, therefore, should warrant this advancement by its neatness and careful planning. Part II of this article illustrated artwork in which two solid colors did not abut. The second color was either outlined, screened or separated from the second by the white card-stock. Now, however, we are insisting in the finest printing work; so our colors should meet.

When artwork is color separated, each color goes to the far side of the separating line. Figure 9 illustrates this point. As is clearly shown, the wider the separating line, the further the color must extend to reach the far side. Crossing across to the far side of the line means the color will lap. The wider the lines the greater the lap.

In poster work, a wide lap doesn't matter. It doesn't matter because you view the poster

from a distance and do not see the overlap. Therefore, if you examine closely the next two-color poster you see, you will notice the third color caused by the wide overlap. You will also find that, when viewed at the proper distance, this overlap is not noticeable. See Figure 10.

Printed work for viewing at normal reading distance must have so small a lap that it isn't evident unless you are looking for it. This situation applies to QSL cards. We achieve it by using thin lines in the artwork. Even though thin lines are adhered to in artwork, sometimes printers have severe trouble because of the colors selected. A yellow color abutting a medium blue forms a noticeable third color where they overlap. In this case green is formed; and, with such light colors, it stands out harshly. Such colors require skillful separation to obtain the tiniest of overlaps.

When color separating artwork drawn with thin lines, use extreme care. Go to the far side of the thin lines but no further. Your drawing hand can frequently be steadied by applying a slight pressure against the thumb of the hand holding the pen, with the other hand. See Figure 11.

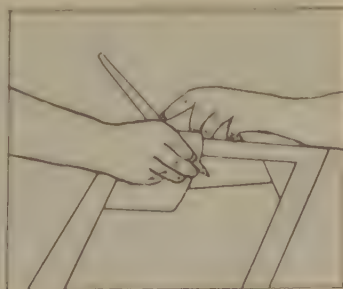


Fig. 11. Steadying the hand when making color separations.

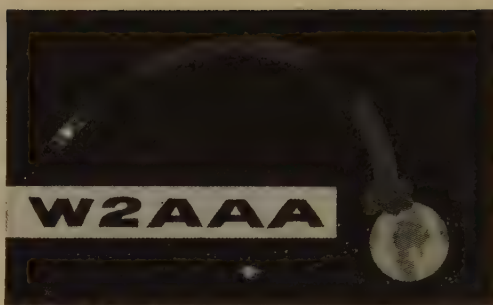
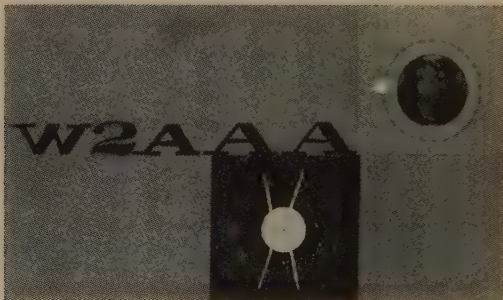
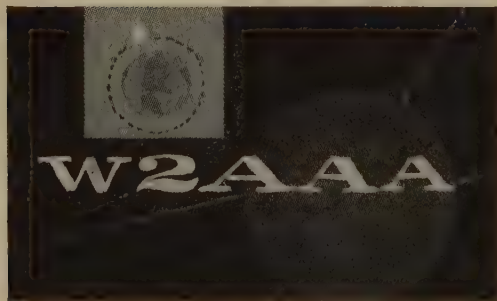
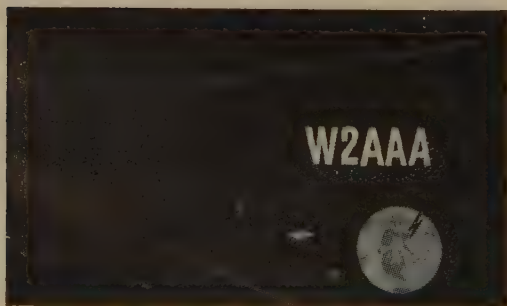


Fig. 12 (a) Satellite launching.

(b) Satellite as symbols.
(c)

(d) Satellite "you-are-there" theme.



Again we come to the design question. If the previous designs, if produced with thin lines, would lend themselves for color separation with the use of solid colors—either linecut or halftone—appearing neatly anywhere in the design. But this time, instead of making halftone artwork out of the designs used in Parts I and II of this article, let's look around for a different subject, one that is "fresh." Satellites are the new, scientific subject; suppose we create some designs around these.

If satellites, then, are our subject; how should we feature this theme? Several ideas come to my mind immediately. First—the launching theme. From releases appearing in newspapers and magazines, the launching of the satellite occurs in several stages. Amid flame and smoke from burning gasses, the satellite starts its piercing trek of the earth's atmosphere. Next a booster charge spurts the satellite through the second stage. Still a third "shot" must erupt to sever the earth's gravity attachment and put this man-made laboratory in unattached space.

A design predominating the spectacular launching has potential for a powerful design theme. My own feeling, however, is that the launching designs would hold interest only until the satellite was launched; after that, the design would be dead. Figure 12a is an artist's comprehensive drawing for a launching design.

Second—Satellite in Space and Viewed from Earth. This is not a hard design to visualize. It can appear at top portion of QSL surrounded by the heavens by stars and planets. A portion of earth could show at bottom of card to complete the perspective. A black or blue-black sky should set off these heavenly bodies.

This design has good possibilities. My only objection to it however is the tiny size the satellite must be to blend properly with planets and stars. It seems to me our highlight—the satellite—gets lost among its bigger brothers. However, such a design would stay alive.

Third—Satellite Symbols. Using this theme, the card design is sectionalized with the satellite trend indicated in one portion. The other portions can be anything you like from patterns to solid portions.

Be careful with this theme so the card doesn't become cluttered. This is a solid conservative design that would show to advantage in black and chartreuse. Figure 12b and 12c are comprehensive drawings based on this theme.

Fourth—You-Are-There Theme. I believe the satellite theme should feature the satellite. The satellite should predominate the card and be recognizable. It should convey action. Can this be done and not clutter the card? Absolutely!

Make the satellite big so it occupies a large area of the card. Keep stars and planets small and in the distance. Now you get the feeling

Fig. 13. Artwork for design in Figure 11d. (a) The black plate (b) The Red plate (c) The blue plate

being in space too, and observing the surrounding galaxy from the vicinity of the satellite. Put enough detail in the satellite for easy recognition. Some lightning flashes from the antenna gives meaning and action to the satellite. Figure 12d shows this design. It was done in black and red with some blue for the earth. Except for the satellite, example four illustrated by Figure 12d is printed from linecut plates. Detail in the satellite occurs from half-tone treatment of the black color to obtain various gray tones.

Preparation artwork for this design appears in Figure 13a, b and c. Artwork for the black plate including the halftone portion appears in (a). The second color artwork is in (b) and covers the red plate requirement. Artwork in (c) is for the blue plate.

Preparation of Artwork

To prepare this artwork, first make a drawing—outlining all the objects in fine pencil lines. We call letters by outlining with thin lines leaving white area within the lines. Now, with soft-lead pencil, shade the satellite sphere. Next attach two pieces of clear acetate to the drawing. Attach the acetate so one piece is taped at the top of the drawing and the other at the bottom. This way of mounting allows either piece of acetate to cover the drawing for separation work; and also, permits both to lay over the drawing at the same time to check the overall separation or the relation one overlay with the other.

Don't forget to put crop marks on the original drawing and on each piece of acetate. Without these, it is impossible to get absolute registry.

Now with India ink or black artist paint, draw in the background. When finished, this artwork for the black printing plate will have the call letters, a white area for lightning and a solid white circle for the world. This completes the black plate.

For the red plate, flip one piece of acetate over the drawing. On this, with India ink and a fine pen, outline the lightning flash. Make it slightly larger than the area allowed for it on the black artwork. This treatment allows a small overlap around the flash to insure the red meets the black when printed.

Now we are ready for the blue plate. Raise the red plate acetate from the drawing letting it swing back out of the way. Swing the second

piece of acetate in place. On this piece we need to draw a sphere containing detail of the world.

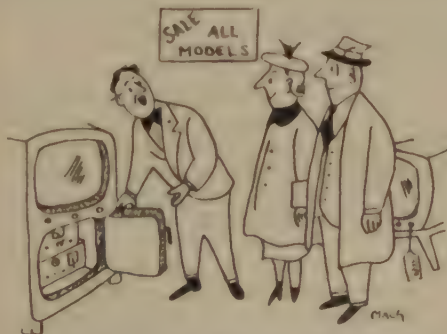
Draw in some continents and some longitude and latitude lines. With the soft pencil, shade the land masses and the water areas about them. Use heavier shading for the land than for the water. Fade the shading so the outside perimeters are the darkest. When finished, shades of light gray will cover water parts, dark gray will fill land areas and black lines will portray longitude and latitude. When printed, all of this will be blue.

Like the red-plate artwork, some lapping is needed of the blue-plate art over the black artwork. In this case it is the blue that abuts the black. Use extreme care when drawing the blue artwork on the overlay to keep the overlap small. The artwork, however, must cover all of the white circle left in the black-plate artwork.

Conclusion

This article had only one aim: to acquaint the amateur fraternity with the art and printing techniques behind those really unusual QSL cards. In so doing, enough commercial art was included to enable those so desiring to make their own designs; or, from their better understanding of the techniques, to transmit more clearly to artists features of the design they want.

Concerning designs, remember this: if you can think of it, it can be produced; if you want unusual and "snappy" designs, they'll be printed from plates created from one or more pieces of artwork; if you want realism, try halftones. ■



This model has a built-in 15 meter jammer to take care of any hams in your neighborhood.

by Rolf Schick, DL3AO

Essinger-Neckar
Plochingen str 43
Germany

The Command Twins

An all-band SSB receiver for less than 25¢ and a little ham's work

With the rapid interest of sun-spot activity during the last two years, conditions on the DX bands become more outstanding again. The QRM curve, however, follows close behind.

During the years of 1953 and 1954, I used a small converter in front of a BC-454 and the results were very satisfying. The sensitivity was good which came to me as a happy surprise. The lack of selectivity (about 10 kc with 3 db down) didn't disturb me in the least in the then quiet bands.

It first came to my mind that all the receivers I used so far, like BC-348, BC-342, BC-455, etc., were nearly useless nowadays when some locals and I worked from Luxembourg in August 1956. Using a BC-342 in Luxembourg we could make 2000 QSO's in one week of operation, but in the pile-up of some 50 stations calling us at the same time we often could only fish out the odd ones. A Q-multiplier might have helped a lot but we feared losing the compactness of the station by adding some outboard equipment.

It was through the CQ DX contest of the same year that I realized that we could have done better. I was one of the multi-operators at DY3YZ who has a 75A4. If you have ever heard of the QRM from commercial stations on 35 and 7 mcs here in Europe, you may know what it means to be able to work 25 W/K stations per hour on these bands.

While Knob, DL1CR, gave numbers out to so many W and K's, I monitored the frequency on a BC-348 that I had in my shack. The only thing I could hear on this frequency was a S 9 + 20 db teletype station. Working with my own station back home did not give me any

more satisfaction than before. One might even hear this sort of comment at a club meeting: "Heh, you must have plenty of XW8's since you don't come back when someone calls you." Something really had to be changed!

I figured that a new receiver must have the following features:

1. Sensitivity must be good, but not too good. In most man-made equipment there is the usual amount of noise and static, however, an ultra-high sensitivity eliminates a great deal of this. Stability, selectivity and a good dial do most to give a "solid QSO".

2. Selectivity should be no worse compared to the Collins 75A4. Both SSB and DSB reception is a must.

3. Stability must be as such so that an accurate dial reading (± 2 kc up to 28 mc's) is possible and that SSB and DSB contacts can be kept without having to finger the dial knob constantly.

4. The receiver should not cost more than \$25.

After having compiled all this information I then had to decide just how I was going to put all this into one compact unit, especially considering the fact that it should not cost more than \$25. It was some weeks later that I found the answer. How did I do it? I shall now let you in on my secret.

The receiver I had consisted of a BC-454 and a BC-453, of which both are very easy to get at low prices. The BC-455 takes care of all band coverage, good sensitivity and eliminates nearly all images, but using this alone does not give good results because of low selectivity and miserable band-spread. This is where the BC

letter to the editor...

by TIMA POPOVIC, YU1R9

Dear Wayne:

When I started writing for CQ magazine, my sole objective was to give pleasure and information to the guys who recently joined our ham fraternity, the Novices. I used to be a lonely guy back in my early days of hamming, who didn't know of anyone who could assist or help me and it was a long period of time before I found that I was getting anywhere with my ham operations, depending solely upon my own ability. When I think about it today, I can remember the strange feeling that came over me when I realized how little and yet how much I was accomplishing from day to day, at such a slow pace.

I thought of the number of Novices that might become discouraged due to the lack of information and understanding needed for their hobby, so I tried to help them as much as I could through my communications with them. Much to my surprise it turned out to be something bigger than I had ever expected. I was flooded with mail for reports from the Novices as well as from the "old timers" who wanted to know if they, too, could receive reports on their signals. The letters came from all over the world, the U.S.A., Canada, Philippines, New Zealand, etc.

The more I thought about SWLing the more letters poured in, completely swamping me and quite suddenly I realized there were more SWLs than commonly known. I also learned that the SWLs were unorganized, that is to say, they were uncertain about giving the right information to hams wanting SWL reports and many times were unrewarded for their efforts. There were only a small number exchanging SWL cards, however there were a larger number, particularly in U.S.A. and Canada who were highly interested in getting SWL reports.

Being a long time SWL'r myself and having had a great deal of experience on the matter, I am convinced there is some way to help the situation . . . an SWL Column. The column would be open to everyone interested in the hobby for exchanging ideas, suggestions, information and devoted entirely to SWL situa-

tions and problems. Calls, names and addresses of hams wanting SWL reports on their signals would be printed. Similarly every SWL who would like to exchange SWL cards with other SWLs or knows of somebody else who would be interested would have only to drop a line to me to be listed. SWLs would also be invited to let us know the calls, names and addresses of hams operating from rare DX areas who answer their SWL reports. Good sharp photos would be appreciated as well. Both hams and SWLs might even state their philatelic preference if any.

It even might be possible that later on, in and when we gather the correct calls, names and addresses, a special SWL Call Book might be printed. This, of course, will depend upon the reaction of the column.

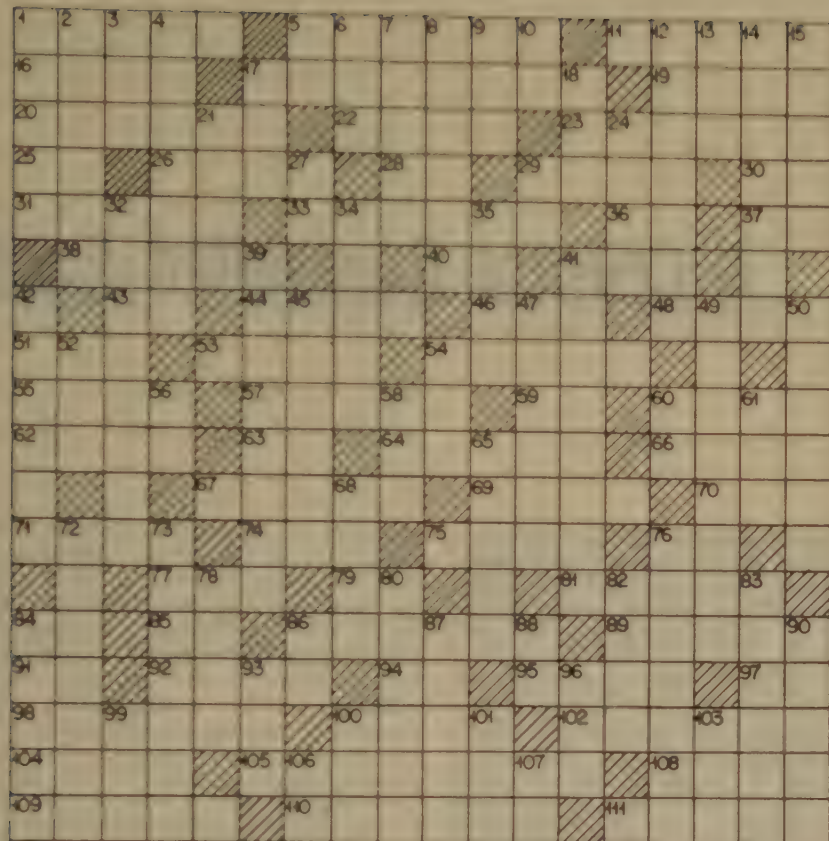
The results, I'm sure, would be most favorable for this new column. The "old timers" will not be bothered by SWLs, the hams who would appreciate SWL reports on their signals will get them, the SWLs will be able to get 100% reports.

Considering all that I have mentioned above I feel confident that all the necessary elements are at hand to open a column for the SWLs, which I believe is almost as important, if not as important as the standard columns (DX, Novice, VHF, RTTY, etc.) already established in CQ. I might add that if this proves to be successful (and I have the greatest hopes that it will be successful) that we might even organize a world wide SWL section affiliated to IARU.

Tima

Editor's Note: It is rather regularly being proposed that CQ run an SWL Column. So far I have been turning thumbs down on this idea, since I have felt that this is a magazine for radio amateurs and should stay that way, without going off too far into philately, photography, and other hobbies. SWL'ing used to be a healthy outlet (in this country) for the fellows who were working towards their ham ticket . . . I used to go in for it myself some

[Continued on page 100]



HORIZONTAL

Directional antenna
Transfer RF
Recorded tape
Constructor's
necessity
Hams
Standing Wave
minimum
Field day
That sweepstake
in CW
Transmitter's product
VHF antenna site
(abbr)
Leaves
Ethiopia
Poker stake
Chile
A net
Type of modulation
Printer's type
End of message
Successful people
Right (abbr)
One of the military
services
Tenth district state
Filter type
Single earphone
mitates
Food for a KH6
Donate
A possible SU
Tear down
Abater

59. Antenna's output.
60. Full contact.
62. Crystal marker's QTH
63. Chinese coin
64. Standing Wave figure
66. Let stand
67. Loads skip
69. The DX under the
pewee
70. Oriental posture
71. Prepares for antenna
masts
74. Time zone
76. Seneca
78. America
79. Know-it-all ham
79. Continent from
VE to XE
81. Over charge for
ticket
84. Ry
85. Popular handle
86. Connected tuning
capacitors
89. Moldings
91. Junior's OM
92. Dash
94. Preposition
95. Transmission
line wire
97. Pronoun
98. Charted resonance
100. Negative grid
voltage
102. Dream of new layout
104. Lebanon spelled out
105. Cathode to plate
traveler

108. DXpedition
109. Tight
110. Novice's homework
111. Operators

VERTICAL

1. Electrons
2. Passed traffic
3. Wooden mast hazard
4. Peaked a receiver
5. Cuba
6. Fit for a horse
7. Say
8. Annoy
9. Argentines
10. Suffix
12. Sky hook
13. XYL's dad
14. Teach
15. Put off
17. Era
18. Jr. Op.
21. Constant disagreeer
24. Not the Tennessee
Valley kind
27. Ham contest
29. Article
42. Reason skip changes
44. Enclosures
45. Print a circuit
49. TV'd
41. GI Radio Ops clothes
42. Done to feeders
45. Users

47. Antenna
49. Operate away from
home QTH
50. QIKN
52. Row
54. Society of Radio
Amateurs (abbr)
56. Electrical Engineer
58. Vetch
60. Like
61. Electrical fish
65. Turn in gear
for new
68. Oven
72. Go where not wanted
73. Impedance matchers
76. Metals that attract
78. Not working
80. Capers
82. College YL
83. Tin and copper
84. Race course in
G-land
86. Good night ala CW
87. Animals
88. Accomplish
90. Looks for
95. Soft drink
96. Part of tube base
99. Renfrew's nickname
100. Honey of a wax
maker
101. "My Fair Lady" sign
103. Am
106. 50-50 in Nero's time
107. Rig when pilot is lit

[Answer on page 108]

A Crystal Controlled Exciter

Most amateurs probably have a number of surplus quartz crystals whose fundamentals, and all harmonics below the ninth are outside of any amateur band. By now many of the owners of these highly prized but relatively useless rocks have despaired of ever making use of them, or they may be waiting for the opportunity, or the initiative, to start a program of re-grinding and re-calibrating them, or just plain throwing them away. The purpose of this article is to circumvent the last-named alternative:—to describe a method of putting these crystals to work—on amateur frequencies—without re-grinding them—and without necessarily using harmonics. It is written for the man whose budget does not provide for a separate, ground-to-order crystal for every frequency on which he intends to work, who does not wish to be rock-bound to a single frequency, but who still wants crystal control.

The circuit operation depends upon the well-known heterodyne principle. In most heterodyne applications with which the reader is familiar, one or both of the input frequencies are variable, producing a variable output. In this circuit both input frequencies are fixed, hence the output frequency is fixed.

In most random assortments of surplus crystals, if all possible pairs of crystals are compared, a number of pairs will be found whose sum or difference of frequencies will fall in one of the amateur bands. Such a pair, or a number of such pairs, will be needed for this circuit. To apply the method it is necessary to set up two crystal oscillators and to provide means of mixing the two frequencies so as to obtain either their sum or their difference, whichever gives the desired frequency. The resultant heterodyne may then be amplified to the level required to excite the transmitter amplifier.

There are numerous possible circuit arrangements which will accomplish this result. The circuit of fig 1 is the one in use at W6QJJ. As shown on the diagram, V1 and V2 are triodes connected as oscillators using the familiar un-

tuned Pierce circuit. This circuit is very non-critical as to tube types, component values, etc. The values indicated in fig 1 are suitable for medium- μ triodes (6C5, 6J5 or similar types). With this circuit a separate mixer has proved to be unnecessary; the common cathode resistor seems to give optimum coupling for efficient mixing characteristics. (Sufficient coupling to produce some degree of heterodyning will exist when the oscillators are merely mounted close together on the same chassis and energized from a common plate supply.)

The oscillator itself requires only two tubes (or the equivalent, a twin tube), two crystals (whose sum or difference of frequency gives the desired frequency), five resistors, two capacitors, plus chassis, sockets and hardware. Sw1 kills the oscillator during reception, in case amplifier keying is used. Since other tube types may give best performance with resistance and voltage values other than those given, it is suggested that a sensitive voltmeter (10k or 20k per volt) and a crystal probe be used to check the output while resistance and voltage values are varied to secure optimum operation.

Fig 2 is a suggested first amplifier stage, which, incidentally, should be included on the oscillator chassis. The output signal, obtained across the common cathode resistor, R_k , contains not only the desired heterodyne, but also the undesired one, the fundamentals of both crystals, and considerable harmonic content. The combined amplitude may be sufficient to overload the amplifier input, if a sharp cut-off type tube is employed. Hence, the amplifier input should be tuned. If the tuning capacitor C3 can be insulated from the chassis, the DPDT switch Sw2 connected as shown, will permit the use of a high-pass filter when using a sum heterodyne (to block the crystal fundamentals), or a low-pass filter for use when the different heterodynes are employed.

Although tuning the plate circuits of the oscillators would result in considerably higher output, the untuned circuit was used for the

f Novel Design

THOMAS D. HERRIMAN, W6QJJ

West Acacia St., Stockton, Calif.

Fig. 1

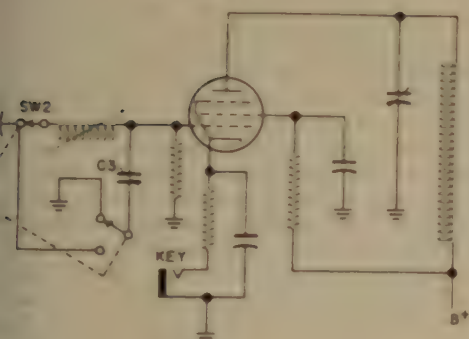
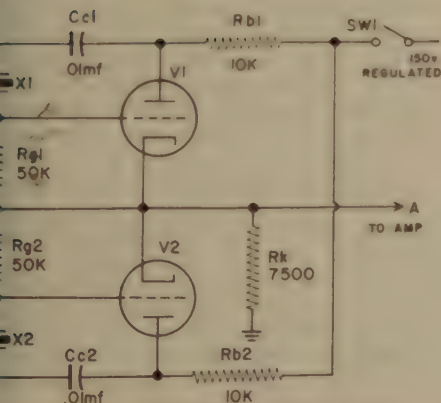


Fig. 2



following reason. Crystal pairs having widely difference combinations of frequencies will often be used to produce heterodynes within the same band. For example 8275 kc minus 4735 kc gives 3540 kc; 11,835 kc minus 8275 kc gives 3560 kc. Tuning the plate circuits would necessitate changing or switching coils, not only whenever changing bands, but also, often when merely changing frequency within the same band. A further advantage of the untuned circuit is its extremely high degree of stability, the absence of abrupt, erratic amplitude changes which occur when a conventional oscillator is tuned in the vicinity of exact resonance. The low amplitude of oscillation minimizes crystal heating; with regulated plate supply and amplifier keying, changes in either frequency or amplitude are reduced almost to the vanishing point.

Prior to an initial trial it was expected there might be trouble from spurious radiation. After all, four frequencies are being generated (exclusive of harmonics) of which only one is the desired signal, and all the undesired signals could be detected with the station receiver. Tests revealed, however, that if the crystal frequencies are chosen as far as possible from the desired heterodyne, the suppression afforded by the amplifier tuning is sufficient. One test, using 3105 kc plus 4035 kc to transmit 7140 kc., showed no fundamental radiation detectible at a distance of one-and-one-half miles, using *only one* tuned amplifier. A second test, using 3105 kc plus 4080 kc to transmit at 7185 kc (using three tuned stages) showed no spurious radiation between 3 mc and 14.4 mc, except a weak second harmonic of 7185 kc, at a distance of only 200 yards.

In regard to the accuracy of the heterodyne as compared with that of a single crystal of the same nominal frequency and tolerance rating, extra precaution is necessary only when the heterodyne falls within a few kilocycles of the

[Continued on page 118]

Bandhopper "6"

by HAROLD L. MARTIN, WØEXN

537 Hentchel Place, Ferguson 21. Mo

The Band Hoppers Radio Club of St. Louis County, Missouri is a "small-town" club near a big city. Organized in February 1951 by five amateurs (licensed hams), it has a limited membership of ten. The "first five" drew up the charter, which in itself is unique and extremely democratic. All members are required to hold office on a six months' rotating schedule. Meeting places are designated in a similar manner, and instead of gathering at the corner pub (XYL's please note) each member takes his turn at holding a combined business meeting and social gathering in his home, hence the ten member limit. To maintain an active and interested membership no member, without just cause, is allowed to miss more than two consecutive meetings and remain in good standing. If this occurs he is put on the inactive list and can only be returned to active membership by vote when there is a vacancy. Perhaps this seems a little exclusive, but it's not intended that way. In a small club you just can't put up with any deadwood and hold it together. At the present writing our membership is a full strength, and we have had little difficulty with lack of interest. However, it is a must in any organization to devise ways of maintaining interest and activity to supplement the rules. Perhaps your club needs a "shot in the arm" as ours did.

The idea of building fixed frequency transceivers as a club project was first presented at a meeting on September 8, 1952. It had been difficult to get together on the air for club ragchews in the past due to most of us being scattered around on different bands and re-

luctant to tune up on a common frequency at a given time. A small rig, including receiver, that could be left turned on whenever we were around the shack seemed to be the answer. This would require operation on a band which was fairly quiet and without too much skip. Therefore the 2 or 6 meter spectrum appeared to be best suited for our purpose. Due to the lack of activity in the greater St. Louis area on 6 meters we agreed that a little promotion on this band would be a worthy objective. In addition to all this was the ever present emergency communications angle. We felt that 6 meters should have the edge on other bands in this category, too, for local emergencies within 20 or 30 miles. None of us had ever tried anything like this, so we agreed the thing to do was to heat up the old iron and go to it.

During the Fall of 1952 and Winter of 1953 several breadboard rigs were made from junk boxes. One member located a bargain supply of 2E26's at 50 cents per bottle. Perhaps this may have influenced our decision to use one as the final amplifier. Receiver, transmitter, power supply, sheet metal, and other committees were appointed, so many, in fact, that all of us were on at least two. Cabinet design, layout, tube types, and hundreds of other details were cussed and discussed until finally in February 1953 we voted that the club would build one six meter prototype transceiver, cost of same to be squeezed out of the treasury. We had only \$38.59 and the treasurer was guarding that with his double-barreled knowledge. There would be none of this "test and throw away" stuff in our watt factory.



The Bandhopper "6" . . . a compact, fixed-frequency, crystal controlled 6 meter transceiver.

During the ensuing months progress was slow, what with FD, vacations, hot weather, and the many family activities that take priority over ham radio. But we did manage to get the first breadboard models working and made our first six meter contact between QJNK and WOLTT in late February, 1953. A lot of time rolled on many big problems resolved to little ones. By November 1953 we had a couple of experimental rigs running, but we were not satisfied with their performance. Determined that these units would perform like breadboarders, we struggled on. Oscillators were rebuilt, pi-finals exploited, cascode r-f stages and i-f's from 455 kc to 10 mc tested, modulation percentages and r-f output checked. The project evolved into something more than building a rig from do-it-yourself plans out of "Scratchie's Scratch Book." We didn't take the word of any of them. Even the theories of Edison, Franklin, Ohm, and the ARRL were questioned. We learned a lot and consumed many hours of our spare time, copy hours, at a hobby which has so many possibilities the surface hasn't even been scratched.

January 1954 had arrived by the time three transceivers were in operation. These were built from junk box parts supplied by soft-hearted members. A special meeting was held to make the great decision. The acid test had been successful. Satisfactory communications were established and maintained over the 21 mile run between QTH's of WØEXN and WØNOA, using a ground plane at EXN's and a vertical element beam (vertical) at NOA's. Now

the club had the opportunity to make a choice of one of the three prototypes, a redesigned unit comprised of desirable features contained in all three, (which would take more time), or to terminate the whole project. Considerable time had already passed and it would still be a long road, rough too, to completion of ten transceivers. A questionnaire revealed that the members' choice, gluttons for punishment that they are, was to build, entirely at club expense, a fourth prototype consolidating all the good features of the other three into one unit which would serve as a model for ten identical rigs, one for each member. Specifications are:

Receiver:

The 9-tube receiver consists of a 6AK5 r-f stage, 12AT7 triode mixer-oscillator, two stages of 4.5 mc i-f using 6BJ6s, 6AL5 second detector and avc diode (approximately 1 volt of delayed AVC), 12AX7 and 6AL5 in TNS squelch and noise limiter, 12AT7 2 stage a-f amplifier and 6V6 power amplifier-modulator.

The triode mixer was employed in the interest of obtaining lower converter noise, tuning is accomplished by variation of the oscillator frequency, r-f and mixer tuned circuits are fairly broadband and it is estimated that the maximum signal loss due to mistracking is about 6 db. The original purpose of the unit was for fixed frequency operation and the oscillator tuning adjustment was to correct for drift or slightly off-frequency transmitting crystals—experience with the unit and the user's desires indicated the need for a wider tuning range. The range in the final model

as increased from 0.5 mcs to 3.5 mcs with the values shown on the schematic. The narrow range can be obtained by decreasing the value of C-210 to 3.5 uuf. Some trouble was encountered with oscillator drift, this was corrected by reducing the amount of capacity in the oscillator with .750 ppm characteristic and replacing it with an equivalent amount of 10 ppm characteristic capacity. The use of triode mixer results in a slight amount of oscillator "pulling," but this has given no trouble when the 4.5 mc i-f is used—a 455 kc would present a stability problem for this reason.

The r-f stage is straight-forward. The antenna tap position was adjusted with an antenna scope to match 50 ohms. It was found necessary to place a copper shield on the center pin of the tube socket to prevent feedback from the plate to the grid circuit. The injection capacitor C-207 is a piece of "gimmick" wire consisting of $2\frac{1}{2}$ turns of #28 E wire around the spaghetttied lead that connects the oscillator cathode to the mixer grid.

The i-f stages employ 4.5 mc TV i-f transformers. These have a bandwidth of about 10 kc at 6 db down. Admittedly this is wider than is desirable under crowded band conditions or during band openings, however for the primary purpose of net operation it eliminates the need for constant tuning and the possibility of missed calls from stations with crystals which are not closely netted. The desirability of this has been demonstrated in several CD drills where high receiver selectivity was a distinct disadvantage. Remote cut-off 6BJ6s, low filament drain, tubes are used in the i-f with delayed avc (about 1 volt delay) applied to both stages. One section of 6AL5 is used as the second detector with the second section coupled through C-220 to the primary of the last i-f transformer to act as an AVC detector with the avc delay voltage being obtained from the cathode of the last i-f stage. A standard TNS squelch circuit follows the detector.

The first a-f stage (12AT7) supplies microphone voltage for a carbon microphone from the cathode circuit. The second stage is designed to introduce grid circuit limiting and plate circuit limiting so that the input to the modulator is clipped and a higher effective modulation level can be obtained. The power output stage is a 6V6 with provisions for plugging in headphones in the output circuit. The output transformer is a universal pushpull output transformer, on "receive" one half the primary and the secondary function as an ordinary output coupling transformer, on "transmit" the two halves of the primary are used as a 1:1 auto transformer to provide "Heising" modulation of the final. This method of connection allows the use of a more inexpensive transformer since the modulator and final amplifier dc plate currents are divided

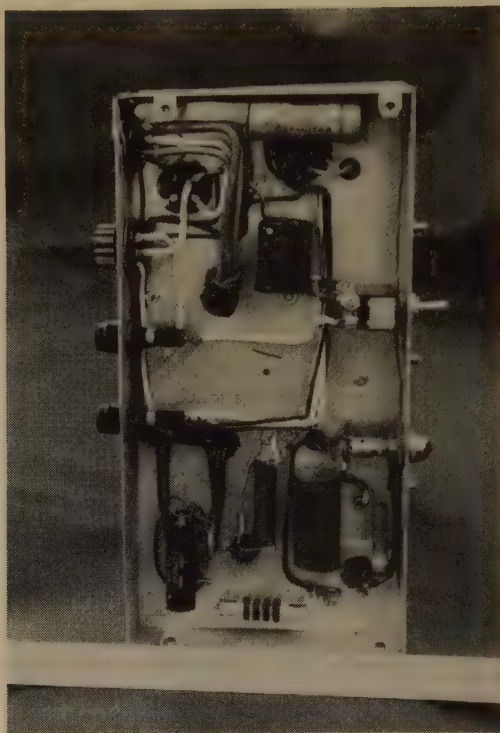
between the two halves of the winding so the dc capacity of the primary wire need be only half what it would be if an untapped winding were used.

Transmitter:

Consists of 6AK6 regenerative crystal oscillator, with the crystal operating on 83 mcs, plate circuit tuned to 25 mcs, a second 6AK6 with its plate circuit tuned to 50 mcs and a 2E26 operated straight through to 50 mcs. Crystal access is provided from the front panel, transmitter tuning adjustments are made through holes in the top of the cabinet, grid current metering jacks are also reached through the top of the cabinet, final amplifier cathode current is continuously monitored by the 60 ma pilot bulb 1-101 which is visible in the center of the front panel. The grid current jacks are shunted with 1 k resistors so that a dc vtvm may be used to read current —1 ma grid current producing 1 volt dc. J-103 provides for insertion of a milliammeter to determine power input to the final amplifier. Checks of the modulation using trapezoid patterns on the oscilloscope indicate that 100 percent modulation can be obtained on peaks despite the use of "Heising" modulation —this is probably due to the clipping action in the speech amplifier stages. The "transmit-receive" switch performs the following functions: Transfers antenna from receiver to transmitter, mutes speaker or mike, applies voltage to final amplifier stage, disables front end of receiver on "transmit." A "netting circuit" has been added to the original design which allows a low voltage to be applied to the oscillator stage through a momentary switch so that the transmitter crystal can be used to spot the net frequency to which the receiver should be tuned.

Power Supply:

The use of a special transformer and appropriate plugs and cables permits operation of the unit on 6, or 12 volts dc and 110 volts ac. 6 volt vibrators are modified by the addition of a 39 ohm resistor in series with the vibrator coil to the ordinarily unused fourth pin on the vibrator. Since the secondary of the power transformer delivers about 350 volts and the buffer condenser and resistor are across the winding on ac or dc operation the rating of the buffer should be at least 6000 volts instead of the usual 1600. Two 6X4s in parallel are used to handle the current drain of the set, some saving in filament current drain might be achieved if an indirectly heated cathode type rectifier with adequate plate current ratings were available. An OA2 voltage regulator is used to provide regulated 150 v to the front end and i-f of the receiver. Both the dc and ac power input leads are fused. Separate power cords for ac and dc operation are used, with a jumper plug inserted at the rear of the chassis for 6VDC or 12VDC, as appropriate.



Bottoms-up view.

member remained. At the end we had a grab bag party and each ham went home happy with a few new junk box items for the nucleus of a future ohm and watt grinder.

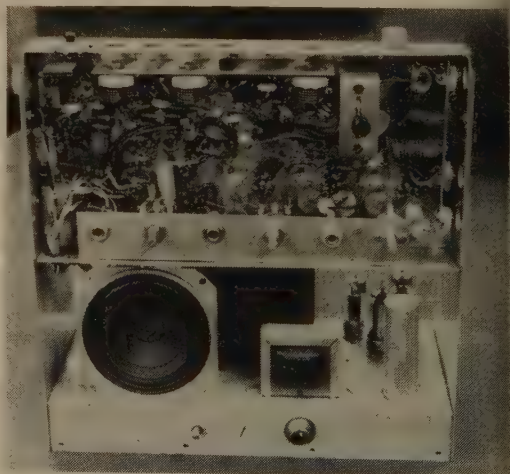
The actual construction of the Bandhopper "6" was split up between four crews, one each for receiver, transmitter, power supply, sheet metal. Since we had no shop facilities suitable for handling all of these operations at one location, each of the four phases were completed in as many workshops. Then all units were sent to one location for final assembly. We owe a vote of thanks to Brother Jim Liley and XYL for donating almost their entire basement to such a worthy cause. Since Jim's basement was frequently a gathering place for the younger set (under ten) he and Helen must have had many trying times, especially on those bad weather days when it becomes necessary to attempt confinement within four walls the future of America.

No particular problems were encountered by the construction crews. Each had a model to use for reference and a schematic as a check sheet. Our sheet metal work went fairly well. All of the chassis', brackets, cover, etc. were hand made without benefit of modern machinery. We used .050 half-hard aluminum donated by a very generous neighbor of the writer and cut to size on his power shear. Form blocks were made for the two chassis and the other bending was done with the use of angle-irons held in a bench vise. Dimensions can be held fairly close in bending this material if you are careful in your layout and allow one metal thickness for gain in each direction; if you make a 90 degree bend each side will measure approximately one metal thickness longer than before. Thus, if you are bending up a chassis to fit inside a given enclosure and using 1/16" thick material you must allow for an overall outside dimension

Cost: \$50.00 or less.

Model IV was completed and tested in a fairly short time, most of us having a hand in it. It was decided to use production line methods for construction of the ten units rather than depend upon individual building. Everyone worked on all of the equipment at one or more stages, thus minimizing any tendency to do substandard work. Not that we didn't trust each other, but, well it's better this way. The units were numbered one thru ten for identification of chassis, cover, and parts. At the end of the construction period a drawing was held and only then did anyone know which unit he would receive.

Production of even the small number of units such as ours presents a lot of problems in purchasing, inventory, distribution of parts, layout, work skeds, etc. To add to the confusion some of us supplied some of the parts from our own private stock. In order to keep the rigs uniform and of equal quality we restricted the personal supply of parts to components of standard make and ratings. These parts were then placed in the inventory. The committee on purchasing, supply and inventory, had a few bad moments over this, but they did admirably when you consider that, when the entire project was completed only minor shortages and overages in parts per



Front view of Bandhopper's works.

of approximately 1/4 inch in length and thickness. This varies some with the hardness of the metal used. It would be time well spent if you are the do-it-yourself type to experiment with some scrap material, checking measurements carefully for increase in size. Another tip is the angle irons, if used, should be smooth, square, and close to the same length as the band. All units were completely assembled and turned over to a "smoke-test" group. A few minor errors were made in the "manufacturing" process, but most of them required tuning up and alignment only. A chart listing voltages, currents, etc. for each unit was compiled and operating standards set up. After debugging, adjustment, and adjustment the rigs were released to each owner. The next regular club meeting was devoted to cleaning up the financial details of the project. Most of us had paid the bulk of the cost, so it was simple math to pitch in a few pennies to cover the balance. The original goal was to build ten transceivers for 50 bucks or less. The components furnished by individuals were included in the figures at market value but the final figures do not include the cost of tubes. These were supplied by each member from a source of his own choice. Using bargain tubes and purchasing your aluminum on the open market would probably run the total to sixty or sixty-five U.S. dollars.

Then there is the mike and an antenna. If you've been a ham for awhile (not the type who buys everything tailor made, but the real fashioned kind who has a few battle scars on the old soldering iron and a junk box) you will probably have a T17B or something similar. Now the antenna is another story, so I leave those your druthers. However, we recom-

mend a 50 ohm coax feedline and vertical polarization. In fact most of us are now using a coaxial job called "the JNK vertical" built by one of the Bandhoppers. (Note below) But, as I said, that is another story.

"Now that the project is complete," you say, "what do you do with these rigs?" Well, as I stated earlier, to keep the club members interested and active you have to keep something going, or, like a fire with no fuel added now and then, they will cool off and disappear.

This project has lasted almost five years, and is still going. Many little modifications and improvements have been suggested and tried. Hardly a meeting goes by, except around Field Day, without a new idea on the Bandhopper Six from someone. Many have been tossed out (ideas), some have been tried, and a few have been used. For example, a different padder condenser in the receiver oscillator circuit to broaden the tuning range was adopted. Then to assure correct club frequency spotting (52.450) a spring loaded slide switch and a resistor was incorporated into the transmitter oscillator circuit. This allowed the operator to activate the oscillator while receiving, thus causing the squelch to open when the receiver tuning control is tuned to the crystal frequency. This provides accurate netting on the club frequency. Another modification that is in the mill at the present writing is "push to talk." This change is not quite as simple as it might seem when you consider the necessity of using a relay under 6, 12, and 110 volt operation, with severe space limitations as well as economic limitations.

The Bandhopper "6"'s have been through several test operations on CD drills and one SET. They have performed satisfactorily under extended periods of operation with only a few minor break-downs. These were the result of using too small a buffer condenser in the vibrator supply, which has been corrected. The equipment is used on Field Days for intercoms between transmitter locations for the cw men to keep tabs on the phone men and vice versa. It is used for mobile communications while on "Safari" to and from Field Day and other locations. The Club is equipped with two gasoline driven generators for operation from fixed locations while on emergency or FD drills. All members are RACES members and use their Bandhopper "6"'s to fill in wherever needed, regardless of the type of emergency or drill. Once we were called upon to assist in handling traffic (automobiles) around the municipal airport for two weekends when a new terminal building was formally opened for the public to view their tax dollars in concrete, glass, and steel. Over 100,000 cars (or was it people) attended each weekend. Our newest project is the equipping of the club with a trailer and tent. This will complete the layout, and if a real emergency arises in our local area, we are ready. ARE YOU? ■



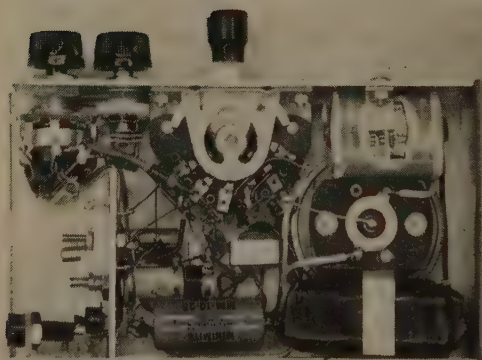
And she looks like this from the back.



transistors

Interior view of the handie talkie with the crystal removed to expose the 5B-100 transistor. The interstage transformer is mounted directly above the microphone/earphone with an aluminum clip.

The Ten Meter Handie Talkie fits the hand nicely. Controls are regeneration, receiver tuning, and transmit/receive from top to bottom.



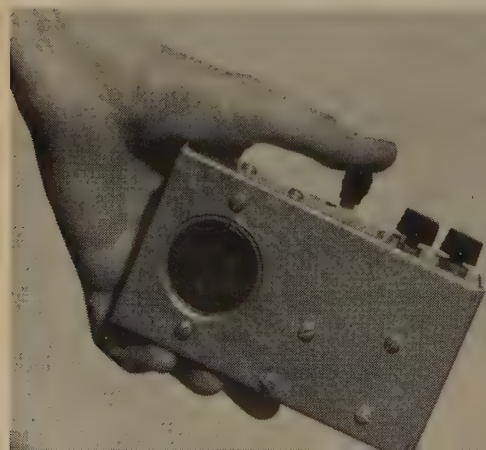
by **DONALD L. STONER, W6TN**
P.O. Box 137, Ontario, Cal

Every so often I get struck right between the eyes with a "real ball of fire idea". Everybody likes a contest and with the current interest in the mighty milliwatt transistor transmitters, why not have "battle of watts" to see who can do the best with the least. After battling around several pads of scratch paper I believe that I have devised a formula that would be fair and equitable to everyone from 16 meters on up. Although several details are yet to be resolved (such as prizes) it should be fun for everyone, and profitable for the winner and runner ups.

I looked through all the publications that I had available* and found several accomplishments with transistor transmitters. The figures were substituted in the formula and the results were rather close. It works like this. The power in milliwatts is divided into the frequency in megacycles and the resultant is multiplied by the distance. CW, phone, sideband all's fair, even 60 element beams. The idea is to radiate as much as possible with the lowest power input. As example of how the formula works, let's assume that Joe Ham builds up a two meter rig using transistors and works 200 miles with a power input of 100 milliwatts (.1 watts) on 144.01. Substituting these figures in the formula produces an answer of 288 points. Incidentally these power and distances are quite possible on two meters with the newer transistors. Circuits coming up.

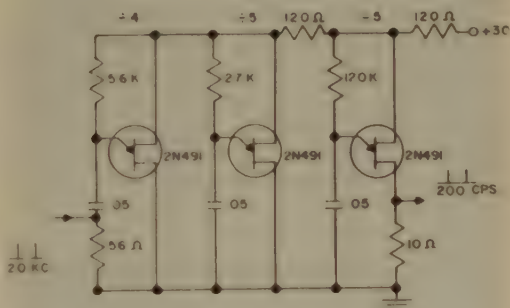
To illustrate the fairness of the formula let us examine an actual case history. E. M. Washburn, W2RG built a transistor rig using a pair of 2N140's. According to his article it

* Transistorized Rig Works 10 Meter DX (Griffith W7MPQ) Radio Electronics May, 57
RF Transistors, Part One (Aerovox Staff) The Aerovox Research Worker Nov./Dec., 56
A Transistorized QSO Getter (Washburn, W2RG) RCA Ham Tips, July, 57
Transistors in Speech Equipment (Albrecht, VK3AHH) QST, Sept., 57
An Experimental All Transistor Communications Receiver (Heinem) May, 56 QST
Transistorizing the Single Sideband Exciter (Jennings and Alvernaz) QST, Sept., 56
The Ten Meter Two Lunker (Stoner, W6TNS) Popular Electronics Nov., 57



Porta Ling

L1 - (Miller 4506) 9-16 uh.
L2-8 turns #28 enamel
over bottom end of L1.
L3-45 turns B&W Minin-
ductor #3012, $\frac{3}{8}$ inch
diameter, 22 TP1
L4-4 turns #20 plastic
wire around cold end of
L3.
MA-0-10 ma midget meter
Kial-80 or 40 meter crystal



XTAL 29.68mc

GimmC

ANT

L1

10mmf

S2a

R

C1

C2

SB-100

RFC

12K

100K R1

3.3K

1.5v

OFF SW1a

1.5v

BLUE

T1

BROWN

RED

GREEN

OFF

S1b

-4.5v

1.5v

20mf 25v

2N44

100K

S2d

R

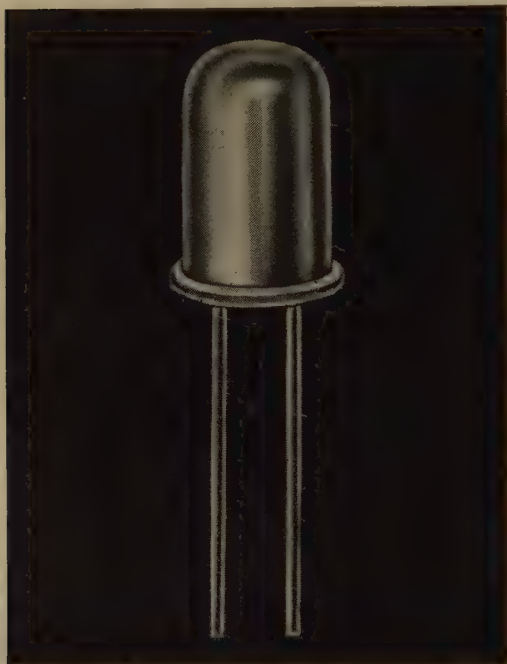
T

S2c

DYNAMIC PHONE UNIT

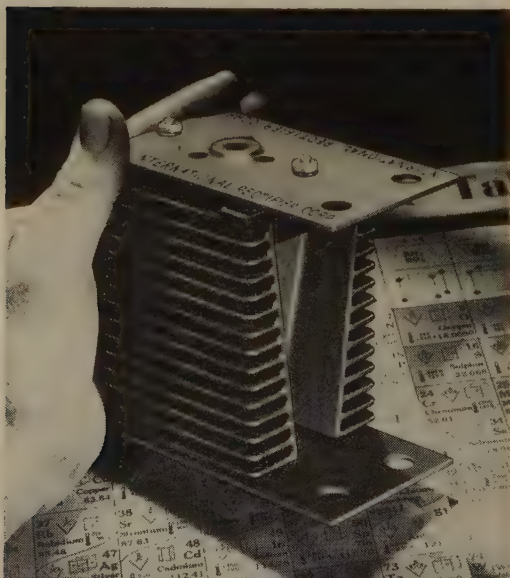
Zener diodes are available from U. S. Semiconductor Products, Inc. with a nominal rating from 3.9 to 560 volts. The nominal tolerance is 10%.

For further information, check B on page 126.



I simply had to remove this 200 ampere silicon power rectifier from my exciter power supply to show you. The radiating fins help dissipate the heat when the Southern California temperature gets up there. For more information on this anodized cast aluminum cased semiconductor,

For further information, check A on page 126.



HAM TIPS (July 1957) he succeeded in working ZS6TR in Transvaal South Africa. This was a distance of 8,000 miles while running 216 milliwatts on 7.002 mc (oooooh the QRM). Substituting W2RG's accomplishment in the formula results in 256 points. Notice that this is very close to our imaginary ham on two meters.

Just to keep you in touch with the situation I will print the latest figures every so often. Four or five of the leaders should be sufficient and the low man on the totem pole gets bumped. As an aid to basic research on this subject I am including a list of pertinent articles at the end of the column. We will start the list rolling by listing W2RG, E. M. Washburn with 256 points, Richard Griffith, W7MPQ, is the leader with 5,500 points. As you may remember from his article in *Radio Electronics* Dick managed to work Canton Island (KB6BC) on 29 mc. This was a distance of 4,500 miles while running only 22 milliwatts! Also listed this month is Monty Hart, VE3TA who has fired up on 80 and 40 meters. He managed to snag K2UYW for distance of 400 miles while running 36 milliwatts on 3570 kc.

So remember no holds barred, and no power limit (yuk, yuk). Pssst. . . . A tip to my very special friends though . . . the probability of the formula is the greatest around ten meters and the QRM on 11 meters is nil. . . . Nuff said?

Monty Hart, VE3TA, sent the circuit for his little rock crusher along with sufficient data for duplication by interested parties. By changing the coils and using suitable crystals, the rig will perform on ten meters also. The basic circuit would remain the same. Monty used the meter in both stages (although not drawn that way) to check the current consumed by each transistor. The bias pot (R1) is set so that the oscillator draws 4 ma. The power amplifier (what?) draws 1 ma. unloaded and 2 ma loaded. I might also inject the comments regarding this and similar rigs. Since the semiconductors are operating class C, and since they used for CW work I believe that as much as 150 mw. could be run safely to units such as the 2N247. Clamping the transistor to the chassis with a good thermal connection will also allow you to "fudge" the dissipation rating (50 mw.) somewhat.

This month's project is not intended to break any DX records, for sure. In fact, it is probably nothing more than a toy when it comes to communications. It does illustrate how transistors could be employed for transmitters and receivers. The basic circuit works as either a super regen receiver or a modulated crystal controlled oscillator. The best DX to date is about 900 feet using a 20 inch whip. It is quite possible that if that device were loaded into a good antenna and the efficiency increased by constructing it on a decent sized

The action of the General Electric Company Uni-junction transistor is similar to the grid controlled thyatron. The device shown here carries the JETEC numbers 2N489 through 2N494



chassis, that it would really get out. Technically, the transceiver uses a Philco SB-100 as a super regen detector and modulated oscillator. Coil L1 is tuned initially so that capacitors C1 and C2 will hit the 10 meter band. The antenna is coupled into the device with a gimmick i.e. two short pieces of wire twisted together. Capacitor C1 is the Johnson S-meter variable that extends out the side of the case. Capacitor C2 is an internal adjustment which puts the crystal on the right frequency. It is interesting to note that this capacitor will "rubber" the crystal as much as 100 kilocycles with good stability. Section B of the circuit switches between the 10 mmfd feedback capacitor and the crystal. Potentiometer P1 varies the emitter voltage to control the amount of regeneration. The audio is more or less standard. A 2N44 PNP transistor delivers roughly 50 mw of audio to the dynamic head-

phone unit. Note that there is no off-on switch in SB-100 collector battery lead. When the emitter bias is removed, the transistor draws only 30 amps and a switch was deemed unnecessary.

No difficulty should be experienced in getting the unit to operate. Coil L1 should be as far away from the chassis as is practical. Excessive antenna coupling (too many turns on the gimmick) will cause the regeneration to be erratic or even cause it to cease. The SB-100 is available from jobbers or by writing directly to The Lansdale Tube Company (a division of Philco), Lansdale, Pa. The 2N247 will also work in this circuit with no value changes.

New Transistors

It is not too often that a really new transistor comes along and we are happy to report on it, when it does. I am speaking of the new General Electric Uni-Junction silicon transistor JETEC numbers 2N489 through 2N494. The unijunction transistor might be considered a solid state equivalent of a small grid controlled thyatron. The unijunction transistor, originally called the double-base diode, was invented by Dr. I. A. Lesk of the General Electric Advanced Semiconductor Laboratory, and has been under development for over five years. The device is particularly recommended for relaxation oscillators, sawtooth and pulse generators, pulse rate modulators, pulse amplifiers, multi-vibrators, flip-flops, and time delay circuits. The accompanying photograph illustrates the fact that this unusual semiconductor device has two bases, with a single junction. The schematic shows one of the many possible applications for the Unijunction transistor.

U. S. Semiconductor Products, 3536 Osborn Road, Phoenix, Arizona have announced a line of Zener diodes. The name stems from the well known Zener Effect common to all diodes. If one applies sufficient voltage in the

[Continued on page 114]

A terrific companion rectifier for my final amplifier power supply is the International Rectifier 600 ampere single crystal germanium power rectifier junction. Actually the rectifier is intended for use in electrochemical and metal refining applications, but it helps me get out so well on 15 meters! Bulletin GPR-2 describes this beauty more fully than I can.



SIDEBAND

Countries Worked

Two-Way SB

W2JXH	101	G3MY	90
DL4SV	98	W3HN	90
ZS6KD	96	W3SW	90
VK3AEE	96	W0QVZ	89
W4IYC	95	F7AF	88
W2KR	95	W2CFT	88
ZL3PJ	94	W6UOU	88
ZL3IA	92	W3BZ	87
W3ZP	91	G6LX	87
K6GMA	90	K2GMO	85
CN8MM	90	TI2HP	85

As we write this, the last column for 1957, it is with a sense of pride and humility to be reporting on a state of the art, which has grown in popularity perhaps faster than any other mode of communication. I well remember "graduating" from Spark to CW, which was also a revolutionary transgression, but in sheer numerical changeovers this has been the more remarkable. At the present pace, your Editor predicts an end to the power wasteful carriers which cause the annoying heterodynes, within two years. With the concern felt by those who know the circumstances, our possible loss of many of our present frequencies, will eventually require utilizing the spectrum in the most economical matter and that can only mean by carrier supression and the use of only one side-

band. Our FCC has already served notice on many of the commercial licensees that they must convert to SSB in the next five years.

The long goal of working on hundred countries, SB to SB has been achieved. Harry Whitting, W2JXH accomplished it by working ET2US and VS2DB for a total of 101. Our sincerest congrats to you Harry. A picture of W2JXH is shown as well as one of Harry. From where we sit it is apparent that Harry has put in plenty of hours on his chair while seeking new countries.

An indication of the popularity of SB in other parts of the world is clearly shown by Humberto's letter which lists eight SB stations in Costa Rica. These are in order of their appearance on the air: TL5JG, Jose; TI2HP, Humberto; TI2RC, Bob; TL2EV, Ernesto; TI2CHV, Charles; TI2ACQ, Adrian; TI2IO, Hans; and TI2LA, Luis. In a country of only one million population this is a remarkable showing.

As previously reported, Ted Henry, W6UOU has been shipping his small 11 pound SSB rig to the remote spots in the world which do not have SB activity. It was operated for several weeks in Brunei by Tony, VS5AT, by Jim, on Baker Island as KH6KS/KB6, by Ted himself as W6UOU/KX6 and now it is giving many stations a new country in Malaya where it is operating as VS2DB by Stewart. It will soon be in ZC5-land.

We can soon expect a new one as Bill ZK1BS, now on AM told me during a QSO

W2JXH, Harry



K0IKL, Joyce





W9AC, Bill

at he was going to change over to SB. Hurry all as we all want to work Cook Island. OQ5GU, Paul in the Belgian Congo has been going strong with his 50 watts to a three element beam. Shortly after a nice contact with OQ5GU, I was surprised to work Earle, 4DGW OQ5 who at the time was seventy miles up the Congo River. Even in the Congo there is plenty of SB activity.

VS1HS is now on 14.324 xtal controlled. and while he is only using a low power exciter, he is making many nice contacts.

As proof that the real "ham spirit" still exists, my note in last month's column of 4TE's problem in finding parts in Trinidad, brought forth an offer from Edgar, W1BDF, to provide Louis with a complete bandswitching exciter. This exciter is being delivered to 4TE by Ted, W5YMX MM, so we should soon be working Trinidad, thanks to W1BDF. It should be allowed the first contact, hi.

Gordie, W7WHB advises of a new club station DL4USN, formed by a group of fellows desiring to become amateurs. There are at present only two ops, but SB is the chief interest and the equipment consists of an SX101, HT-30 and an HT-31.

Hal, KR6HN whose picture is shown, has completed raising his 85 foot tower, and three and Hy-Gain beam and is putting in a husky signal with the HT-32 barefooted. A new 833A beam is under construction.

KR6HN, Hal



We are happy to welcome another YL-side-bander, Joyce of KØIKL whose photo is shown. Joyce, who received her general class license in June has already worked fifteen countries on SB including HS1A, CN8MM and ZS6KD. Her rig is a Pacemaster, a 75A4 receiver and a ground plane antenna.

George, W1EQ by contacting DU7SV, VP2VG, OQ5GU, VS4JT, ZC4DA, KAØSC and ET2US brought his total up to 76. Bob, K2GMO hooked VS4JT and GD3GMH for number 84.

John, PY2JU, who contacted 3A2BX in Monaco for country number 72 advises that a new SB station, PY2KD is now active in Brazil. His handle is Alvaro. PY2BEW in Lima will be on SB very soon. Welcome fellows.

F7AN and G3IRP took a KWM-1 and a 20A with GG 6AG7s to Monaco this month and operated several days as 3A2BX on 10, 15, 20 and 75 meters. A full story of their trip will be told in next month's column.

Charlie of F7AF made it 86 with EL4A and HC2AGI. Jerry at HC2AGI told F7AF that he will soon have a beam up aimed at Europe.

KG4AQ is now on SB and will be at this QTH for two years. He is heard on 15 and 20 meters and is EX KL7AIZ. His mailing address is D. S. Metzger, CTC, Box 41, Navy 115, F.P.O. N.Y.C., NY.

GM3CIX is looking for XE on SB to complete a WAZ. Congrats, VS6AZ, Luk is putting a wonderful signal all over the world with his new KWS-1. VS6DE is also very active from Hong Kong.

Mirko, YU1AD is very pleased with his new mechanical filter rig and the EL34 GG linear. He sounds great with it, on 15 and 20 meters. Harry, JA1ANG now has a VFO and is able to move around in the band. He is finding 15 to be good with his dipole antenna in spite of the high mountains between him and the States. His recent contacts were with VS4JT, CX5AF, OA5G, DU7SV, HS1A, G3BX1 and DL40D. He is on daily from 2200 to 0500

(Continued on page 94)

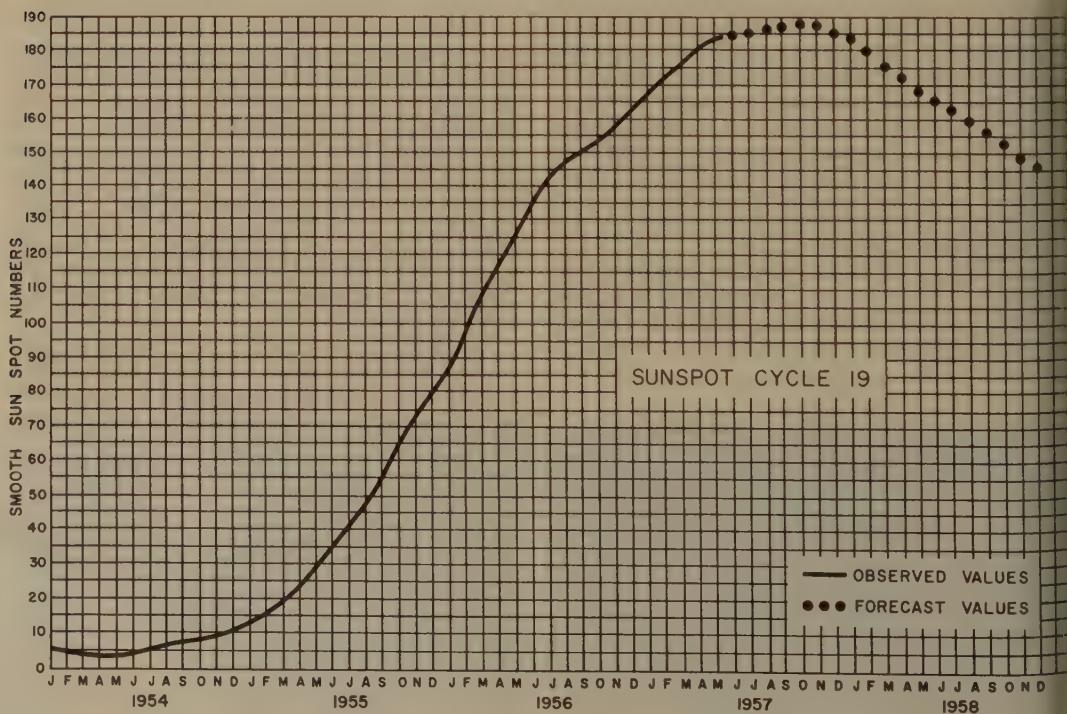
PROPAGATION

February Propagation

During February the sun continues its travels toward northern skies, and as it does so its distance from the earth is also increasing. As a result, less ultraviolet radiation sweeps across the ionosphere during the full daylight hours, causing somewhat lower values of MUF's than occurred during the winter months. This means fewer 6-meter openings towards Europe and the Far East, although some openings to these areas are expected. 6-meter openings to South America are expected to occur rather frequently during February and March. Conditions on 10-meters should continue to remain excellent for world-wide DX from shortly after

dawn through the early evening hours. With increased hours of daylight, the 15-meter band is forecast to open to all areas of the world as often as it did during the winter months and is expected to remain open for a longer period of time. On some days, DX reception on 15-meters may be possible around-the-clock. The increased hours of daylight during February and the spring months also results in 20-meters remaining open longer than during the winter months, with the band frequently expected to remain open for world-wide DX around-the-clock. During February, peak conditions are expected to occur on 20-meters shortly before, and after sunrise, and from the

Fig. 1



ALL TIMES IN EST				
Western USA To:	40/10 Meters	15 Meters	10 Meters	40/80** Meters
Europe and North Africa	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Central and South Africa	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
South America	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Caribbean Sea	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Asia and Oceania	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Antarctica	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Europe and North Africa	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Central and South Africa	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
South America	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Caribbean Sea	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Asia and Oceania	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)
Antarctica	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)	8A-1P (1)* 8A-5A (2) 8A-6P (3) 8A-7P (4)

late afternoon through the evening hours. Fairly good DX propagation conditions are expected on 40 meters from shortly before sundown, through the hours of darkness, until shortly after dawn. Early morning openings to Australasia are expected to improve considerably on 40 meters during February and the spring months. Both ionospheric absorption and static levels increase during February, and these effects should be quite noticeable on both 80 and 160 meters. Only an occasional nighttime DX opening is forecast for 80 meters, with even fewer openings on 160 meters.

Outlook, 1958

As predicted in this column as early as March, 1956, the present sunspot cycle, cycle 19, has reached a level of activity higher than ever recorded previously. The latest smoothed sunspot number, centered on May, 1957, is 184. The latest monthly number reported by the Zurich Solar Observatory is 207 for November, 1957. Although it is not yet certain, evidence indicates that the peak of the present cycle was recorded during the fall of 1957

[Continued on page 112]

ALL TIMES IN PST				
Western USA To:	40/10 Meters	15 Meters	20 Meters	40/80** Meters
Europe and North Africa	8A-11A (1)* 8A-6A (2) 8A-11A (3) 11A-2P (2)	8A-8A (2) 8A-1P (2) 1P-3P (2) 6P-11P (2)	11P-2A (2) 2A-8A (1) 8A-1P (2) 1P-6P (2) 6P-11P (2)	7P-12M (2) 8P-12M (1)**
Central and South Africa	8A-3P (1)* 8A-8A (2) 8A-12N (2) 12N-4P (4) 4P-7P (6)	8A-8A (1) 8A-12N (2) 2P-1P (4) 7P-11P (2)	12N-2P (1) 2P-4P (2) 4P-6P (4) 6P-12M (2)	6P-10P (1)
South America	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Caribbean Sea	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Asia and Oceania	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Antarctica	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Europe and North Africa	8A-11A (1)* 8A-6A (2) 8A-11A (3) 11A-2P (2)	8A-8A (2) 8A-1P (2) 1P-3P (2) 6P-11P (2)	11P-2A (2) 2A-8A (1) 8A-1P (2) 1P-6P (2) 6P-11P (2)	7P-12M (2) 8P-12M (1)**
Central and South Africa	8A-3P (1)* 8A-8A (2) 8A-12N (2) 12N-4P (4) 4P-7P (6)	8A-8A (1) 8A-12N (2) 2P-1P (4) 7P-11P (2)	12N-2P (1) 2P-4P (2) 4P-6P (4) 6P-12M (2)	6P-10P (1)
South America	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Caribbean Sea	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Asia and Oceania	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Antarctica	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Europe and North Africa	8A-11A (1)* 8A-6A (2) 8A-11A (3) 11A-2P (2)	8A-8A (2) 8A-1P (2) 1P-3P (2) 6P-11P (2)	11P-2A (2) 2A-8A (1) 8A-1P (2) 1P-6P (2) 6P-11P (2)	7P-12M (2) 8P-12M (1)**
Central and South Africa	8A-3P (1)* 8A-8A (2) 8A-12N (2) 12N-4P (4) 4P-7P (6)	8A-8A (1) 8A-12N (2) 2P-1P (4) 7P-11P (2)	12N-2P (1) 2P-4P (2) 4P-6P (4) 6P-12M (2)	6P-10P (1)
South America	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Caribbean Sea	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Asia and Oceania	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Antarctica	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Europe and North Africa	8A-11A (1)* 8A-6A (2) 8A-11A (3) 11A-2P (2)	8A-8A (2) 8A-1P (2) 1P-3P (2) 6P-11P (2)	11P-2A (2) 2A-8A (1) 8A-1P (2) 1P-6P (2) 6P-11P (2)	7P-12M (2) 8P-12M (1)**
Central and South Africa	8A-3P (1)* 8A-8A (2) 8A-12N (2) 12N-4P (4) 4P-7P (6)	8A-8A (1) 8A-12N (2) 2P-1P (4) 7P-11P (2)	12N-2P (1) 2P-4P (2) 4P-6P (4) 6P-12M (2)	6P-10P (1)
South America	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Caribbean Sea	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Asia and Oceania	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**
Antarctica	8A-12N (2)* 8A-12N (3) 12N-4P (4) 4P-8P (3) 8P-10P (1)	8A-8A (2) 8A-12N (2) 8P-2A (3) 2A-5A (1)	8A-2P (1) 2P-4P (2) 4P-10P (4) 10P-2A (2) 2A-8A (2)	7P-6P (2) 8P-6A (3) 8P-2A (2)**

SYMBOLS FOR NUMBER OF DAYS CIRCUIT FORECAST TO OPEN:

(1) 1-4 days (2) 5-11 days (3) 12-18 days (4) 19-26 days (5) over 26 days

* Indicates possible six-meter openings.
** Indicates possible eighty-meter openings

The CQ DX Propagation Charts are based upon a CW radiated power of 150 watts at radiation angles less than thirty degrees and are centered on the Eastern, Central and Western areas of the USA. They are valid through March 15, 1958. All forecasts are based upon ionospheric data published by the CRPL of the National Bureau of Standards, Boulder, Colo.



by **DONALD L. STONER, W6TN**
P.O. Box 137, Ontario, Cal.

Novice

Hey you! Yes, you thumbing through CQ Magazine on the news stand. Want to become a Radio Amateur? Sure you do, or you wouldn't have gotten this far back in the book. Honest, it's not hard. Remember boning up for the mid term exams last semester? It's about that stiff, and a darn sight more fun! Ham radio operation could be a turning point in your life. If you have a genuine interest, drop me a card or letter and I will put your name in the help wanted section. Before you can say "Jack Robinson" a helping Ham will contact you and put you on the pleasure path towards your own hamshack.

All the hustle and bustle has subsided getting that super duper silver plated converter for satellite reception working. Looks like I'll have to set it aside for a while, unfortunately. I was very sorry to hear of the failure of the Vanguard rocket as I am sure you all were.

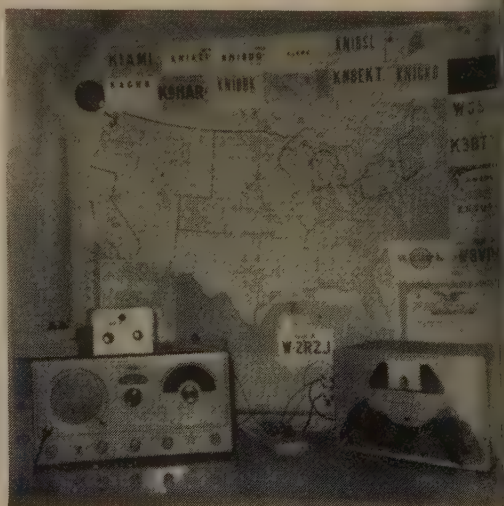
This month's column includes some pieces of new commercial gear that will be of particular interest to Novices.

World Radio Labs, Broadway at 34th, Council Bluffs, Iowa has introduced two antenna couplers for amateur use. The *Globe Matcher, Jr.* Model AT-3 will be found in many a Novice station from now on. The AT-3 is designed to operate with any type of transmitter with a power input of 100 watts or less. It is contained in a very attractive grey hammertone case measuring five inches high, 4 inches deep, four inches wide and weighing approximately two pounds. The cabinet is completely enclosed to insure that those nasty harmonics in your transmitter stay bottled up where they belong. The *Globe Matcher, Jr.* aids materially

in transforming the impedance of random length antennas and long wires to your transmitter.

In operation, you simply adjust the TRANSCOUPLING and the ANT. TUNING until the desired amount of loading is obtained, as indicated by your transmitter plate current meter. A neon bulb is provided on the front panel of the AT-3 to indicate the presence of RF. This antenna coupler will provide a definite increase in radiated power when you replace

Ralph, WN2RZJ, 2-19 27th Street, Fair Lawn, N. J. has worked 22 states for WAS so far and will sked anyone for WAS or rag chew. He can be found splitting the ether on 40 meters.



Jim Hauser, KN2YJN, 62 Harrison Avenue, Kenmore 23, N. Y. uses a Gotham 3 ele. wide-spaced beam, up 55 feet as shown. Jim has tracked up 29 countries and some of the better DX includes ZC4, UA1, PS, F8B, GD4, EA, OK, 4A1, Z12, MP4, CX5, and an assortment of F's and G's. He still needs Nevada and Utah for WAS.

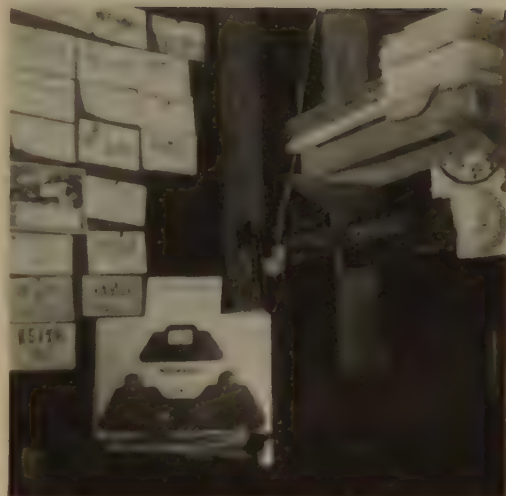
North Carolina is represented by Dick Paschall (14), KN4QZG, 106 Bryon Court in Jacksonville. Dick picks 'em up and puts 'em down with a DX-15 and an S-38D along with a 15 meter dipole. DX includes VE5-6 and WP4.

Picture of a contented man. . . . B. G. Mancel, W9N9IUM, 6076 N. Gifford St., Indianapolis, Ind. supports a 75A1 plus a beautiful home brew rig all contained in a 19" rack. Looks like a terrific idea for small spaces.

all too common method of "brute force" of random and long wire antennas. Amateur Net on the AT-3 is \$15.95. The construction is very complete and the constructor should have no difficulty in completing the unit.

So need to junk your "CW only" rig when the big day arrives and you fire up for the first time on the General Class frequencies. World Radio Labs also makes a Screen Modulator adding voice modulation to *any* transmitter in the 50 to 75 watt class. Although this little unit is designed specifically for the Globe Chief 90 transmitter it may be used with any other transmitter such as the Heath AT-1, Emerson Adventurer, and the Knight 50 watt. Complete conversion instructions are provided for converting these transmitters and the same techniques would apply to others such as the 20.

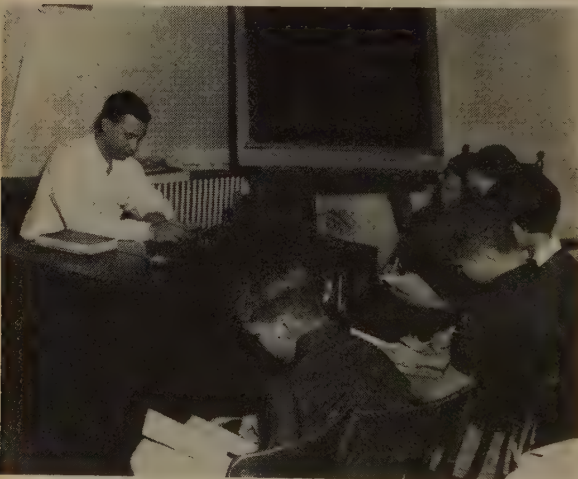
The Model SM-90 Screen Modulator is housed in an attractive grey chassis box measuring approximately 5 X 3 X 2 inches, and the tubes and transformer project through the top. On the side of the chassis is an eight pin octal plug that connects to the accessory socket on your transmitters and provide all interconnections between the units. A printed circuit board greatly simplifies wiring of the modulator. The theory of operation is very simple. A 12AX7 dual triode amplifies the tiny microphone voltage to a usable level. This voltage, in turn, drives the first half of a 12AU7 (another dual triode) which provides even more audio voltage for the modulator. Transformer T1 couples energy to the second half of the 12AU7. This portion of the tube is connected in series with the voltage feed to the final amplifier screen of your "CW only" transmitter. As the audio modulation voltage varies, it causes the second half of the 12AU7 to pass more or less voltage to the screen of the final amplifier. The final amplifier screen voltage directly controls the power output of your transmitter and since





Thanks to Kelly Johnson, WØYNY, the Scout Master of Troop 222 from Dawson, Minn. for this shot of the station at the Boy Scout Exposition at Montevideo, Minn. From left to right: Howard Nelson, SWL, Eric Solie, KØESQ, Stan Molstad, KNØHGP, Rolly Wold, KNØJYK, and Kelly Johnson, WØYNY.

My hats off to Mr. Edward Asay, K2GTJ, of Middletown Township shown here instructing some of the 25 students enrolled in the Code instruction class sponsored by the Garden State Amateur Radio Association. The code classes are held every Tuesday and Thursday at the Red Cross Headquarters Bldg., Broad St., Shrewsbury, New Jersey.



A very neat short wave listening station belonging to Shinji Hasegawa, JA31050. Shinji reports that the examinations for an amateur license are very difficult in Japan.



your "voice voltage" is powering the screen it causes the transmitter output to change amplitude. Presto—amplitude modulation.

The manual is written in clear language and "can't miss" instructions are provided for converting your present transmitter. Amateur No. on the Screen Modulator SM-90 is \$11.95.

Speaking of transmitters, I have been completely captivated by the New International T-12 transmitter. The T-12 provides all the essentials of a neat Novice cw transmitter but is not "packaged". By that I mean it is not boxed up in a pretty cabinet and doesn't have those shiny knobs that cost so much. It allows you to use your inventiveness in a manner that none of the other kits can do. When you complete the wiring of the simple printed circuit board (a one or two hour job), it can be installed in your own cabinet, in present equipment, in a mobile case, or in a portable case (for vacations and such). The number of ways that the T-12 can be used is only limited by your imagination.

Technically, the T-12 is completely contained on a 3½ x 6 inch printed circuit board (a pretty powerhouse placed on a printed package!) The output is between 3.5-4.0 mc and 7.0-7.3 mc with a power input of 14 watts. A 12BH7 is used as an oscillator-buffer and drives a 5763 power amplifier. For ease of tuning the T-12 uses a pi-network antenna coupling system and will load any antenna between 50 and 500 ohms. By the way, with only a small amount of fussing, the little jewel can be modified to work on 15 meters. Because of the close control of circuit capacities, International can supply crystals with a .005% tolerance for those of you who like to work close to the band edges. Also, provisions have been made for separate connections to the final so that it can be modulated. They thought of everything! The only thing you will need to fire up the completed kit is a power supply (capable of supplying 350 volts at 60 ma. and 6.3 volts ac at 1.35 amps and a key. The cost of the kit, including one crystal for either 80 or 40 meters is only \$10.95, less tubes. Tube cost about \$3.00.

Heath Company's latest contribution to amateur operation is the AM-2 Reflected Power and SWR Bridge. As you know, I have been spouting about these bridges ever since I brought out the Moni-match II. The AM-2 is a commercial version of the bridge designed by the Naval Research Labs and indicates how much juice is coming back down your transmission line, with respect to how much you are sending up. It doesn't tell you how much power you are actually putting out. Who cares? What it does tell you is how to tune your rig and antenna coupler so that the most power is radiated by your antenna. That's what counts! If you desire to prove its effectiveness, tune your rig as you would normally and check the signal strength at some remote location. Then insert the AM-2 and tune (and you will have to) for minimum reflected power. Now note the increase. During a test at this QTH I was able to increase my reading by several "S" units on a friends receiver.

The AM-2 is housed in a grey crackle cabinet measuring roughly 7 X 4 X 4½ inches and is designed to work with either 50 or 70 ohm transmission lines and it handles a full gallon of ease. The front panel is graced by a very optic meter that is calibrated in percent of reflected power and the standing wave ratio.

I firmly believe that every ham should use an SWR indicator for maximum performance. If you are too busy to build one, the Heath AM-2 is an easy way out at \$15.95.

If you build the AM-2 observe the following cautions. The nuts on the meter studs on the unit were very tight and require some careful wrench juggling to loosen. I understand this is not common to all the meters; I thought I should mention it tho. Also, just before you are ready to insert the trough in the rear of the case check the fit of the coax connectors. This can be done by slipping the connectors in the mounting holes from the back of the case. The holes may need enlarging or it might be necessary to re-position the connectors slightly. It is a very simple operation and it might save wear and tear on the cabulary.

Who's DX?

I received a very nice letter from Shinji Segawa JA3-1050, #1815-15 Higashi-kocho, Tarumi-ku, Kobe, Japan describing some of the amateur conditions that exist in Japan today. One unusual aspect is that beginning Japanese hams can use phone but not CW! Also, power is limited to 100 watts, and the highpower KA stations cause a lot of trouble to the JA stations. Although he did not include the dates and times, Shinji reports during the following Novice stations: J6CLJ/MM, KN6YLO, KN6VSG, J6DHU, WN6EDE, WN7GZT, WN7HJY, J7CNL, WH6CKK, WH6BXZ, WH6CBF,

WH6CFU, and WL7BZQ. Many thanks to you for the report, Shinji. Hope to hear more from you in the future.

Here is the monthly list from our friend Tima Popivic, YU1-RS-357, Banat, Novo Selo, Yugoslavia. October 21, at 0220 GMT on 7 mc. KN4RGN. Oct. 20, 21 mc, 1800-2100 GMT, KN1AMI, BMN, BNV, CIA, DDC, DJG, KN2BLI, WN2HFU, TKZ, TTG, KN2YGV, YLE, YUX, YYA, ZJB, KN3AFP, AHB, WP4AIL, KN4OHC, ONY, PLQ, QNL, RHQ, KN5JCQ, KN8HAL, HJP, HRP, KN9HKE, HNW, IHN, KNØINR, IPY, IWQ, KOB, KUF. Oct. 21, 21 mc, 1900-2100 GMT: KN1BNG, KN2CAT, WN2NIB, KN2OSU, PSU, YMU, YQG, YQL, ZPG, KN4MUP, PIA, QIY, KN8DSL, EZQ. Oct. 22, 21 mc, 1800-2030 GMT; KN1BRO, CSB, DAA, DAI, DIR, WN2FOB, KN2ZGG, KN3BCE, BQZ, KN4MVX, PFD, RDD/4, RIV, RNC, KN9HEL. Nov. 1, 21 mc, 1920, 2200 GMT: KN1CAK, CKK, CPD, CTN, DJX, LIU, KN2AHZ, CDO, DLU, WN21YB, ROU, KN2ZNS, KN3BZV, KN4MZO, OUZ, PQV, QBW, QHB, KN4RIX, RMK, RNU, RPD, KN6YME, KN8EBE, EUK, GAZ, GVK, HWN, ICE, KN9HQS, HYW, IBP, IQS, IQY, KAL, KNØHWK. Nov. 2, 21 mc, 1800-2120 GMT: KN1AQL/1, AYQ, BAU, BHB, BZK, CFP, CZR, DSN, DSX, KN2CNQ, CYR, WN2HPR, JKK, JOZ, MZR, KN2VOD, YGN, YIT, YPT, ZGZ, ZRF, KN3AHK, AOX, AYT, AZC, BQS, BYV, DYV, WN3JPQ, KN3LQS.

Hubert Moore, K4OID, 406 Massalina Drive, Panama City, Florida is 15 years old and knocked the "N" out of his call a month ago. He can be found on 80, 40 and 15 running a Globe Scout 680.



WP4AKA, KN4ELW, MKN, MQB, PUZ, PWY, QHI, RCR, SFP, KN5JEH, JQO, KEW, KSV, KYH, KN6YOU/3, KN8EFI, EOT, ERX, GUP, GYU/2, GZI, HAI, HAY, HGY, IOT, JTK, KN9GNO, HQM, HSS, IDW, IGS, INW, IUI, IYW, JDC, JTI, JXZ, MSG, KAR, KNØIPG, IPZ, JWR, LIJ, LVF, LWT. Many thanks to you also Tima for this nice report. Remember fellows, if you write to our overseas reporters for confirmation or for listening schedules remember to include sufficient International Reply Coupons. You can afford it!

Bouquets

I want to thank everyone who has read *The Novice and Technicians Handbook* and written to say how much he enjoyed it. W6SAI and I appreciated your kind comments more than you know! This was my first attempt at a handbook, and I'm happy that it has been so well received.

In case you haven't run across the article titled *A \$1.69 Keying Monitor* page 42 of the Sept. 57 issue of QST, look it up. This is one of the simple Novice aids that a column editor often overlooks. If you are like me, and need to hear what you are sending, this is for you.

Net News

Ronny McCloud, W1DVT, 20 Wellington St., Shelburne Falls, Mass., would like to start a teenage net on six meters. Contact him for more information.

Bob Ogren, KN1CVH, 931 Pleasant St., New Bedford, Mass. is starting a net called

the School Kids Teenage Net. NCS will alternate between KN1CVH and Boyd Colglazier KN9IHO, on a frequency of 21.105 mc. For more information write to either Bob or Boyd.

Help Wanted

Larry L. Langrehr, 1431 East Avenue, Bensenville, Ill., would like help with the code and theory. Larry's phone number is GU 4-7603.

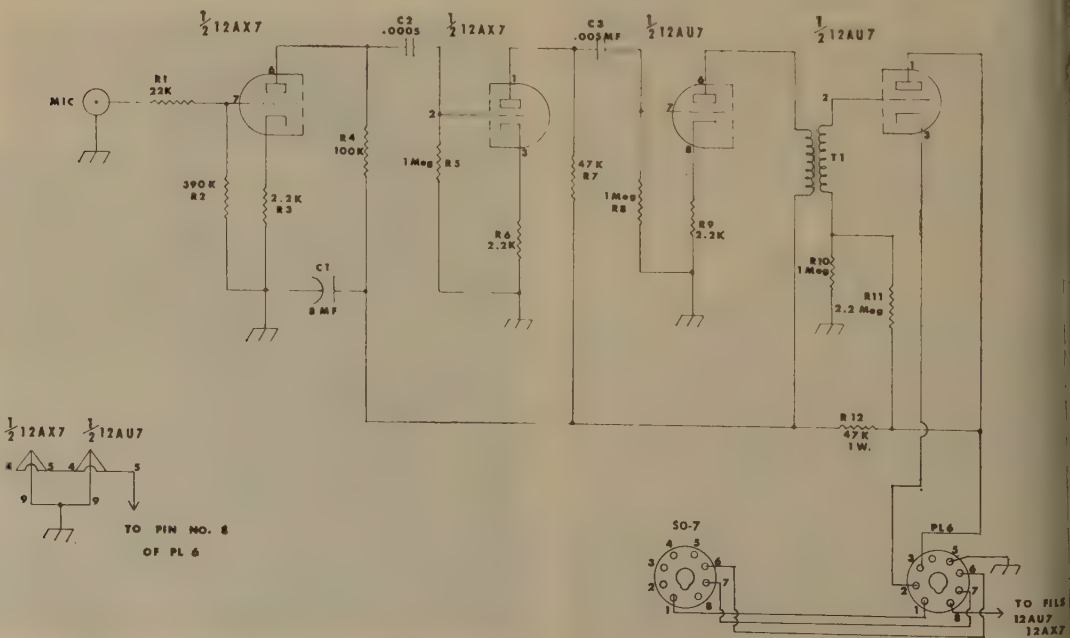
Robert D. Thornton, Forest Park, West Point, Georgia can send and receive 15 wpm but would like help with the theory.

Phil Haley, 217 Country Club Lane, Belleville, Ill. is 14 and would like to meet a local ham to help him with the code. His phone number is EX 7-6554.

Morris G. Heins, KN4RJN, 443 Grandview Street, Memphis 11, Tenn. is hammering the ether with a Globe Chief 90 and an SX-44 and operates on the 15 and 40 meter bands. WAS is 28 and the DX includes LU3, VE3, 427, and 8, not to mention an non-existent GW1.

Cliff Anthony, KN1BYL, 30 Prospect Hill Road and Al Woodhull, 220 Lincoln St. of Lexington, Mass. both wrote to express their thanks to "Pop" Wilkins, W1DFK for helping them and other fellows to obtain their Novice tickets. Al and Cliff run 35 and 75 watts respectively, don't work much DX but sure have a lot of nice rag chews.

John Winzeler, KN9IEI, 624 Surrey Lane, Glenview, Illinois runs 25 watts to the homebrew rig that is described by the ARRL in *How To Become A Radio Amateur* and has worked five states and did FB in the first half



the Heath Reflected power and SWR Bridge, Model RM-2. Notice the new plastic meter now being used by Heath, jeezy huh?

International Crystals 80 and 40 meter transmitter model T-12. The two capacitor screw slots partially hidden by the coil are the loading (pi network) and the final plate tuning.

In the left a printed circuit screen modulator kit manufactured by World Radio Labs. This unit will adapt any Novice cw transmitter for phone operation. The Globe Matcher Jr. is an antenna tuner for any transmitter in the Novice power range.

the S.S. contest. John uses a National NC-100 as the inverter.

Myron "Question Mark," Box 52, Columbia, S.C. has passed his Novice exam and plans to use a DX-20 transmitter, an S-53A receiver and a 700' RL multiband antenna for 80, 40, 20 and 15 meters.

Myron "Question Mark" (not related to the one in the 202 Howard Street Bellevue, Ohio is another almost Novice. Myron uses a Halli-Moders S-40B, and although this is a good transmitter, he still has not caught on how to concentrate on one signal in the QRM. Possibly some local ham can show Myron some of the tricks or help him work out a "Q" multiplier circuit for the S-40.

Kent Carlson, WH6CJJ, Box 713, Wailuku, Hawaii, T. H. is finally putting a signal into the states on 15 meters. The first contact was with KNQIYO and has now worked 18 states in all call areas except KN2. Kent can be heard on 15 between 6:00 and 8:00 pm PST and will be looking for you.

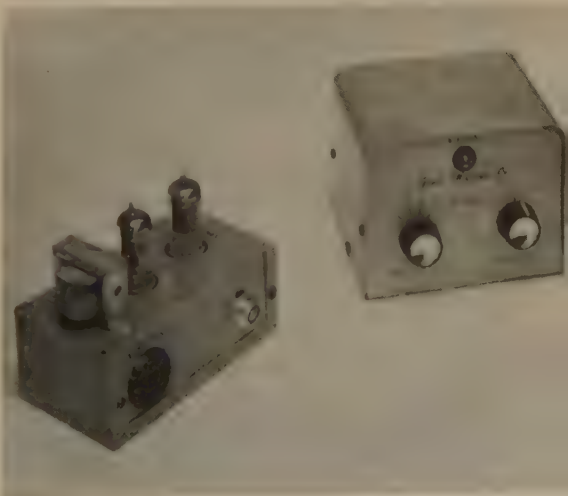
Thomas R. Savage, WN6FRG, R2 Box 900, San Jose, California is an almost General. He is planning on a 500 watt rig with a pair of 6X4s in the final and Collins 70E8 VFO. He is currently using a modified AT-1 and a 6X28A receiver.

William J. Rezzonico, WN6EDE, 715 Madison Drive, Colima, California says that he never has enough money at any time to subscribe (*ask, ask*). He must have spent it all on a HQ-140-X, the Mosley Super "5", the new crank-up tower, the Heath DX-35, to mention the home brew gear. Hummm. He has worked all call areas, 42 states, Canada, Alaska, Hawaii, and Guam. 352 contacts in 18 months, not bad at all.

Tex Birnholz, K2VAB, 634 High Street, Newark 2, New Jersey will sked anyone needing the Garden State for WAS.

Charlie, K9GSV, Hanusin, 2021 Indianapolis Blvd., Whiting, Indiana is on 40 meters

[Continued on page 77]



VHF

50mc. 144mc. 220mc. 420mc. and above

by **SAM HARRIS, W1FZZ**

P.O. Box 2505, Medfield, Mass.

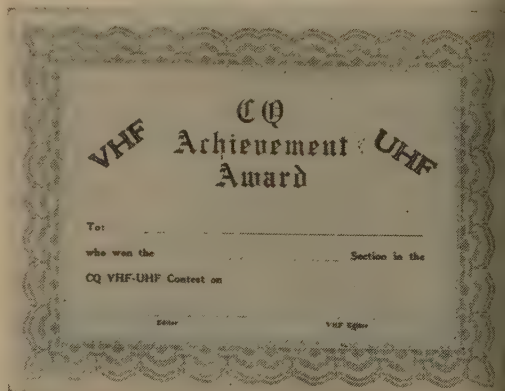
In the six meter "Question and Answer" box I find a preponderance of "how do I get rid of channel 2" letters. These are closely followed by "How do I get rid of W1FOS*" (*local high power station) and are backed up by on the air comments such as: "When she points her beam my way I can't hear anything but her" or "every time he comes on I can hear his sidebands a megacycle away", etc. The majority of these complaints are the direct result of inadequate receiving facilities.

CHANNEL 2

Interference from Channel two doesn't just happen. It is generally the result of spurious frequencies which are generated in your converter. It is always possible, by the use of simple arithmetic, to determine the mechanics behind any spurious signal you hear. For example consider a crystal controlled six meter converter. I.F. output is 10 to 14 mc. Crystal frequency is 40 mc. The interfering signal is channel two video (as evidenced by a hum modulated signal every 15750 kc). Center frequency of the interfering video mess is 49,500 kc. (This frequency is determined by tuning in each successive carrier until the strongest one is found. The sideband signals will always be

weaker than the carrier.) It becomes obvious upon inspection that 49.5 mc is not the sum or difference of any of the frequencies directly involved. (Video frequency of channel two is 55250 kc. Converter oscillation frequency is 40 mc). The signal appears to be on 49.5 mc which means that our I.F. receiver is hearing it on 9.5 mc. A little arithmetic gives us 120 mc (third harmonic of the converter crystal) and 110,500 mc (second harmonic of channel

CQ VHF-UHF CONTEST ACHIEVEMENT AWARD





In case you have heard K6GDI this is what you were listening to. An 80 foot high, 30 foot long, seven element yagi, good for WAC.

o video). The difference frequency of these 9.5 mc.

So there you are. One case of channel two interference tracked down. What to do about it. The first step is to put the blame where it belongs. Don't blame channel two. Don't blame the converter or its manufacturers. They are just doing what they set out to. Each in his own way. It's just that they aren't compatible. Most stations make a point of having strong signals. Most good converters make a point of converting weak signals into readable ones. In the process of converting they usually use a non linear device called a mixer. Into this non linear device the local oscillator output is fed. In most cases in large enough quantities it drive the mixer well into the class "c" region. And class "c" means grid current and lots of harmonics so that even if your local oscillator signal is clean to start with, you still get lots of harmonics for spurious signals to start with.

Now if you pump a few thousand microamps of channel two into the front end of your converter and you have only the normal three or four tuned circuits ahead of the mixer—well, that's what you have been complaining about. Of course if you weren't so lazy and were willing to tune the R.F. stages in your converter, you probably wouldn't have any

K6GDI, Bob Perry, first W.A.C. on 50 mc.



problem. Unfortunately even if you overcome your laziness you would have to redesign your converter. And you know you can't build a good converter or your wife wouldn't have given you one for Christmas. So what can you do? Well, believe it or not, there have been several articles published in "CQ" on filters for various bands. One of these (July 1956 CQ) by Bob Kuehn (WØHKF) deals with six meters. While the article is labeled as a TVI filter it works both ways. Properly adjusted it will give sufficient selectivity to completely eliminate channel two type interference.

If you don't feel that plumbing is your forte, I guess you could find some one who would be glad to sell you one for a modest sum. (If you can find one for \$25.00 or less that does the job, let me know.) (If on the other hand you are willing to pay \$29.50, I'll be glad to tell you where.)

Now leave us not have any misunderstanding. This filter business will cure channel two type problems but it will not do anything about WIFOS type of interference. W2SHU had a few words to say about converter overload a few months back. We'll say some more next month.

EI2W

In case any of you VHFers don't know about Harry, EI2W, here are a few facts.

Harry took up VHF in 1951 and made the following "firsts" since that time.

144 Mc First EI-DL EI-ON EI-PAØ EI-F EI-GM EI-GI EI-GC EI-GD

435 Mc First and only EI-G (204 miles)
EI-GW (147 miles)

70 Mc First EI-G

50 Mc First EI-W (W2JTE 10/27/57)
EI-VE (VE3AIU 11/2/57)

Harry held the European Record on two meters in 1952 with a 655 mile QSO with DL3VJ. All his contacts have been made on

phone and he has worked 298 two meter stations (outside Ireland) in eleven countries.

He formed the International VHF society some years ago to try to overcome some of the difficulties of operating VHF in Ireland. As all contacts made on the VHF bands in Ireland must be dx contacts, that is the first drawback. However, he managed to get a number of G and GM stations going, by providing a dx contact in EI land as a reward for their labors.

Harry is married, has a son at the University is greatly interested in music, is a Governor of Wesley College in Dublin, has his finger in many local charities, AND expects to start writing a VHF book very shortly.

You can see from this very brief summary of Harry and his activities, that he just hasn't a thing to do except "ham".

Congratulations to our Irish friend who spends so much of his not-so-free-time promoting activity and new friendships on the VHF bands, both on his own continent and ours.

W.A.C. on Six (K6GDI)

KH6BRJ, LU4DFN, EI2W, ZE2JE and JA2QR got together and decided that old (Old?) Bob Perry ought to have WAC on six meters. So they worked him and he did. Bob worked half (about) of his continents with 100 watts to an 829B. Finished up with 200 watts to a pair of 4E27's. Antenna (see photo) is worthy of the name. In addition to six meters K6GDI also operates 220 and 420 and amateur T.V. I don't have a rundown on his T.V. transmitter but hope for more information next month.

Six meter Phone W.A.C. (W6BAZ)

Shortly after I heard EI2W working Paul (W6BAZ) I found out that Harry was all Paul



The smiling face left belongs to VK3GM, George R. McCulloch of Ballarat Victoria, Australia. The reason for the smile is the beautiful trophy at the left. The trophy is the "Ross Hull Memorial Trophy" awarded VK3GM by the Wireless Institute of Australia for being the top scorer with 969 points in the Ross Hull VHF Contest December-January 1955-56 on 50, 144, and 288 mc.

needed to make WAC on 80 mc phone. To say he was happy is putting it mildly. No photos from the King of the converter makers (no converters either). Congratulations are in order.

The VHF Institute Awards for operation above 146 mc in the 2M band

Certainly a splendid idea for increasing the activity in the hinterlands of our two meter band, thus following data will fill you in on a very simple but very ingenious contest.

Work 25 different stations while operating above 146 mc.

The station worked does not necessarily have to be above 146 mc, although it is preferred.

QSL's are not required as proof of contacts, but the Amateur VHF Institute reserves the right to call in the log of the station applying for the certificate.

Applications for the award must list each station call letters, date, time and applicant station frequencies.

Mail application to W2AOC, 9701 Shore Road, Brooklyn, New York.

We wish the VHF Institute success in this venture and are sure that the two meter fraternity will help by getting up in the band and making some noise so that the agitation against VHF ham bands can't say that we never use anything but a small percentage of the band.

Albuquerque, New Mexico From the scarcest state (excepting Delaware) on six meters, comes word from Jim Shafer (K5LJJ).

"Hope for better operation. There are six contacts by December 21st at the latest. And with a technical aid will assist for watts to a six element beam, but hope to copy that New Mexico QSO."

Beginning the 22nd of December, I will be working this and will be on the air during the day and evenings much as possible. Will be looking forward to working somebody who needs or wants a New Mexico contact. *Those who don't need or want it? Mr. QSL, a want fancy but they will be prompt.* That's all we want, someone on six in New Mexico, who lets us know he really will be on and wonder of wonders will QSL too.

Aswell, New Mexico Another candidate to help anyone get that be-oo-tiful state on six meters. Frank Green (K5IQL) sez:

"Be glad to help anybody into New Mexico if they will something about getting m.u.f. up to 50 mc! I'm a shoo!" It peaks at 46 to 48 around 0900 m.s.t."

"Have worked VE1EF, VE1HT, VE1PQ. Hear 140C VHF. Have heard British TV and broadcast in 42 to 48 mc range."

"Incidentally, have had but one New Mexico contact six myself, so you guys aren't doing so bad! My contact was W4SG1 5." Congratulations to both of you.

"This time last year, we were getting good trop. into six on two meters. Not a peep this year. Am beginning think this section is for the birds!" Not so Frank, for *amen's sake, don't give up now, not until we nab you guys.*

Terre Haute, Indiana Charles (W9ZHL) sez: "50 mc very good here in Terre Haute, Indiana. On 11/57 I heard KH6CN and KH6PP; 11/16/57 I worked 7AH, KL7AUV and KL7CDG, heard KL7AZI and 7CDS, all from 1300 to 1700 CST. At 1650 I heard

JASAO for about ten minutes, he was working into the W7 area. I heard Alabama, Pennsylvania, New York, Ohio, Connecticut and Massachusetts on reflected skip with the beam pointed northwest. *Confusing sometimes, isn't it? Hear the east coast fellows working the west coast about every day but don't hear the west coast stations. Just 1's and 2's on reflected skip with the beam to the west.* Thanks for the dope, Charles, we have lots of that same thing here when you boys are working skip, ds, or what have you. Can hear you but not the important fellow.

Sointula, British Columbia Ike comes through for British Columbia, and I think everyone in the states knows that Ike just has to be VE7AQQ.

"Just thought I would let you know that I worked JASJJ on 50 mc on November 13th at 1555 P.S.T. JASBU at 1620 plus two others, one on cw, whose calls I could not completely identify. Also worked KH6PP and KH6NS on November 10 and KH6UK and KH6CCZ on November 11th. About 1230 P.S.T., all good strong signals. Also heard LA9T on cw on November 5th." Since this was written, and at last report Ike had worked sixty-five JA's.

Benson, Arizona Herb Johnson (W7GRA, ex W6QKI, ex W3QKI, ex W8QKI) sends news from his area.

"Six meters finally came to life around here. Been dead for two months. Worked EI2W on mornings of November 16th and 19th. He was very good S7 on the 19th. VE1's were very strong and W1's fading between S7 and nothing. Heard W1HOY and called but N.D. Guess 6's were riding in too loud."

"Looked on ten for cross band to England but N.D. Found out later that G2BVN had been calling me, sorry I missed him. KL7's have been coming in after VE1's fade out, *here too*, along with very bad QRM on low end from scatter stations. They splash up as high as 50.1 mc. I hear them only when the KL7's are coming through, but at times I can't copy a thing below 50.1."

"Band was open today during operation 'Smoke Puff'. No noticeable effect." Glad it started opening up for you too Herb. Started here about the 1st of November.

Porterville, California One of the VHF gals has come through for us, Norma (K6ZEH) tells us of activity at her QTH.

"Sunday, November 10th, the O.M. and I worked Hawaii and Japan (JA3EK) and then Monday the 11th worked Hawaii again, KH6UK and KH6PP; all S9 signals."

"JA3EK was on phone, his signals were 5-6; we were 5-7-9 on cw."

"Then Tuesday W6FZA (the O.M.) worked ZS3G, Africa at last!! What a thrill!! This morning, Wednesday, we heard W1HOY 9 plus 20 db. Band opened to Nova Scotia for 3 1/4 minutes!" Congratulations to you and the O.M., Norma. May seem like we're saying this too frequently lately, but golly we sure do mean it.

Uniontown, Pennsylvania This great state is heard from via W3AKZ.

"Have been working some six meter O.M.'s and YL's from the home QTH. Have a 6 n 2 about sixty-five watts, 4 element beam, up around sixty-five feet, a crystal control also a 162A plus a Collins 75A4. Mobile rig in the car is a Gonset Commander II with a converter into the car radio. Work the mobile rig in my travels and also from the famous Summit Mountain, 2480 feet elevation. So far the mobile peanut whistle has worked into South Dakota, Nebraska and down South, Texas, Florida, etc."

"Six has been HOT here since November 1st; both ten meter, cross-band into England as well as six both ways. Hearing G8BTA, OH5NW, G2COI, but no contacts. Have worked both ways on six into Sweden with SM6BTT on November 21st. He works around 50.110 and has a fine signal in here. Also SM7ZN, Ingvar at around 50.125. Also worked KL7AZI on November 21st."

"Have around thirty-one states (not all confirmed as yet) and need an Oceana contact to make WAC. Have to limit my operating time here on six as we have Channel 2 out of Pittsburgh."

"Will have a 150 watt rig on the air soon out at the Uniontown Radio Club, W3PIE, and hope to do a lot better from there. Will be glad to arrange any schedules possible, so if the boys are interested have them advise." *Thanks for all the information O.M. always happy to hear from your vicinity.*

Grande-Ligne, P.Q. A few words from friend Dave Still (K2VTX/VE2):

"A couple of months ago you published my letter about getting on six. Quite a few things have happened since then! First thing, we got our ticket and put on a powerful two watts on six, using an 882 in the final! We feed the whole deal into a quarter-wave dipole about sixty feet up in the air, and the receiver was an SX99 with a tuned fixed converter ahead of it. But they just wouldn't believe it! I was putting in too good a signal all around New York City (when I was at the Jamaica, N. Y., QTH). I even invited them over to behold this little monster, but no good. Then we got the call for school and that was the end of our six meter excitement!"

"My O.M. has received his VE2AZT call, and if I can get him on six I will."

Topsham, Maine Little - heard - from - Maine comes through again via R. Butler (W1GQL/1).

"I noticed in reading your column in "CQ" of December that Helen has worked some W6's in October, and that the band should be opening up soon."

"I would like to be put on record as having worked W6's and W7's this month (December) and also this past Sunday (December 8th) I worked EI2W in Dublin, Ireland."

"This is not probably an unusual feat in itself except that I have worked all of the above on phone using a Gonset Communicator and a Lunenburg five element beam."

"Perhaps I sound like a hornblower, *Nope*, but I don't mean to be. All this proves is that it doesn't take much power to get out on the VHF frequencies when the band conditions are right." Incidentally the Communicator was working straight into the beam without the benefit of any amplifier."

"Just before I worked EI2W I heard two Norwegian stations coming in, but the band was very funny. It seemed as though the high end was much more open than the low end." *F.B., O.M., we agree one hundred per cent about conditions etc., when the band is open. When you're there at the right time, it doesn't make much difference what you're running.*

Phoenix, Arizona Don Roberts (W7RUX) emits with:

"I would like to notify you that I have worked four continents on six meters and am working very hard for the other two."

"I have worked Europe, Africa, North America, and Oceania and would like to set up skeds with South America and Asia."

"It probably sounds funny that I haven't worked A.A. yet, but have been active only from May '57 on, so have missed out on them. *Been a busy little bee since May, haven't you Don?* I would like to know if WAC has been worked by anyone in the States yet? So far Don, two 6's have worked all continents, but at last contact they still had no confirmation from Europe. *Hope they have them long before this gets in print.* I have worked so far, seven countries but only four of them are confirmed."

"The rig here consists of a Viking 6 n 2 at 75 watts, a six element Telrex beam 60 feet high, and a GPR-90 with a homebrew GG converter. Plans for the station include another six element beam stacked and a pair of 4-125A's which is coming along rather slowly."

"I normally operate on 50.040 and 50.2 on phone, and 50.005 on cw from 0900 until noon MST daily and anytime

on Saturday and Sunday. Will be looking for fellows in Asia and South America, or anybody needs a QSL card from Arizona." *Thanks Don, good to hear via U. S. mails from your fair state.*

Albany, Georgia One of our regulars, Ben (K4BLA) comes through again:

"There has been quite a bit of activity around here on six this month. There wasn't a signal heard here from the 1st through the 16th of November, but on the 17th I worked SM7ZN in Sweden, also heard LA8RB and LA9T in Norway, but did not work them. I heard SM7ZNN work around forty stations in Georgia, Alabama, and South Carolina, Tennessee, North Carolina and Virginia, and I could listen to both sides of the contacts (many of them). Then the band switched and I worked VE7CN."

"On the 19th there was an opening to the northwest and I worked W7WRA for my first Oregon contact, then W7VBH, W7CET and heard a number of others. On the 20th I worked VE7AQQ." *That Ike sure gets around. Nice report Ben, keep 'em coming.*

73, Sam, W1FZJ

VHF Contest Results

A certificate just like the one shown is being sent to all the "lucky" winners of the September "C" WW VHF Contest! However, it's pretty obvious that although thirty odd states and Canadian provinces were heard from, large multitudes of people neglected to turn in their logs. Certainly there was more activity than ever before, at least in this corner of the U. S. as evidenced by Helen's non-competitive score of 47,392. In fact, if you will peer intently at the scores listed it will become evident that big fat scores are not always necessary to win a contest (viz W7QLZ from Arizona).

"Old John" W8LPD, has won the second round in the battle for the Microwave Associates VHF Trophy. I don't want to wish him any bad luck, but why don't some of you fellows at least make him try a bit harder? Although if he wins next time we'll just have to figure some other way to keep his dander up so that you others won't have life made too easy for you.

Getting back to that log problem, we people who decide the contest rules try (really I do!) to make them as plain ?? as possible. But, there are a number of you wretches who insist on being individualists and operating under your own rules. Please, fellows, we don't want to disqualify a top score, or any score for that matter, because the rules weren't followed. Several of the boys sent in logs without all of the information necessary to call a contact legal for the contest. Some stations, notably multi-op, sent in logs which showed some remarkable inconsistencies in logging contacts. The cues for these faux pas are obvious, but a cure is no good unless it is applied to the patient. By the way, an easy way to avoid having to copy a log over is to use carbon copy methods and individual pages. Then the work of copying is unnecessary and you really have no excuse for sending the log in.

We are already planning a new contest for the usual time in April, and it looks like enough logs are coming in from some states

arrant the inclusion of 2nd and 3rd place
rds to the needy, in states from which a
cient number of logs are received. (I won't

define "Sufficient" now, you'll just have to
wait.) So gird your loins for battle and remem-
ber to send those logs in!!!

Contacts Counties Score Band

FLORIDA				
OR 6	126	18	6336	50
CR	95	14	2260	50
QO	86	13	1800	50
	37	10	740	50
OR 6	36	9	688	50
	32	9	390	144
ZV 6	104	14	2912	144
A 3	49	13	1274	144
AW 1 5	46	13	890	144
CH	35	9	880	144
AT	35	9	880	144
K	17	8	140	144
JG	10	10	280	144
E	10	6	240	144
JP	10	23	2392	Multi.

BRADO				
J	10	5	100	50

NECTICUT				
KE	96	72	7872	50
SE	100	43	8452	144
L	90	37	6808	144
RQ	96	29	5568	144

OIS				
OS	112	19	6492	50
NS	20	5	200	144

ANA				
Q	52	26	2704	50
V	30	14	840	50
V	11	2	44	50
Q	30	16	960	144

E				
AM	44	22	1936	50

LAND				
YM	38	17	1292	50
C	9	4	72	50
K 3	53	27	2862	144
CG	10	6	120	220
C	8	5	80	220

ACHUSETTS				
YOY	246	76	47392	50
DE 1	137	43	1890	50
U	94	26	4888	50
T	86	22	3784	50
U	116	37	8584	144
DE	100	40	8000	144
IC 1	93	42	7812	144
G 1	102	31	6125	144
SM	72	19	2736	144
F 1	47	27	2538	144
T	53	19	2014	144
M	48	16	1536	144
MM	35	12	840	144
L	25	11	550	144
N	48	8	384	144
Z 1	16	9	288	144
U	16	13	416	220
U	64	46	6288	Multi.
OP	64	41	5248	Multi.

rice [From page 71]

will sked anyone needing Indiana but it
have to be in the wee small hours of the
ing, TVI eh?
liott Pearl, KN9KBB, 3355 W. Lee Street,
ie, Illinois whacks away with a Harvey
s TBS and an NC-125 on the 40 and 15
r bands. Elliott would like to locate a
by ham with a Viking Valiant for sale.
nybody?

MICHIGAN

WBBKT	50	10300	50
WBBQ 6	31	6076	50
KBAQ	59	15	1770
WBTIN	25	11	550
WBUAL	19	5	190
WBURO	71	30	4260
WBYM	31	8	496

MISSOURI

KBAK 1	85	19	3230
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NEBRASKA

KOWRT	13	4	104
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NEW HAMPSHIRE

WIAZK	33	22	1452
WIIQD	8	5	80

NEW JERSEY

K2BRI	76	36	5472
W2ORA	86	29	4988
K2MYQ	43	27	2322
K2KIB	70	29	4060
K2KJ1	75	16	2400
K2JYPT	63	15	1890
W2NTY	1	1	2
W2RGV	15	12	360
W2NTY	13	9	234
W2OZA	14	8	224

NEW YORK

K2CBA	122	55	13420
K2IUV	106	32	6784
A2ORG	70	30	4200
K2JJY	73	27	3942
K2JYX	74	33	4884
K2LZF	47	24	2256
K2BAW	55	19	2090
K2RLW	50	19	1900
K2DBB	44	20	1760
K2KJ1	44	18	1584
K2VAW	51	15	1530
W2LBN 2	36	19	1368
K2VPK	51	12	1324
K2TGH	55	10	1100
W2JVZ	33	15	990
K2QVC	38	12	912
K2MAZE	40	9	710
K2SJB	25	14	700
K2YIH	19	7	266
K2CUQ	8	6	96
W2POA	83	43	7138
K2GVA 2	20	13	520
K2QIX	18	9	324
KN2TUW	19	8	304
K2LXC	23	6	264
K2MY1	14	6	168
K2BKG	10	6	120
K2SKB	7	6	84
KN1CFL 2	3	2	12
W2AOC	20	14	560
W2QNA	27	13	702
W2EM	28	16	448
K2GSM	45	14	1260

NORTH CAROLINA

K4KSM 4	15	9	270
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GEORGIA

K4DLE	9	4	72
W4FWH	8	2	64
W4G15	7	4	56
W4FWH	5	2	40
W4G15	4	4	32

OHIO

WBMVN	164	43	14104
WBAQ	40	26	2080
WBRQV	33	16	1056
K8GOX	36	11	792
WBNAF	41	9	738
K8BPK	12	7	168
W8WIN	35	18	1260
W8PLQ	10	6	120
W8HOF	10	3	180
W8SCW	11	4	88
W8LGI	9	2	36
W8WRN	9	2	36
W8BAX	5	2	20
W8HPT	5	2	20
W8LPD	165	70	23100
W8BMO	34	11	748
W8UHZ	11	6	132

PENNSYLVANIA

W3JMY 3	112	53	11872
W3UGO	73	37	5402
W3YMC	66	32	4424
W3TDF	43	22	1892
W3TDF	98	43	8428
W3ZSS	74	39	5772
W3GWY	16	11	352
W3ARW	19	13	494
W3FXI/3	21	14	588

RHODE ISLAND

W1FVZ	4	19	1558
W1ZJQ	134	57	15276
W1VXC	16	9	288
W1FEO	6	5	60

TENNESSEE

W4TDW	47	26	2444
W4ZZ	18	13	468

TEXAS

K5BEL	47	5	470
K5HYF	17	5	170
W5LFM	12	4	96

VERMONT

W1EXZ	6	6	72
W1UIZ/1	67	38	5092

VIRGINIA

K4PCN	37	19	1406
K4RAY	44	13	1144
W4JCJ	10	4	80
K4BNI	66	36	5016
W4JCJ	34	27	1836
W4UMF	10	7	140

WISCONSIN

W9JCI	106	34	7420
W9TQ	2	8	144

WEST VIRGINIA

W3KZ/8	51	22	2244
W3GHQ 8	45	22	1980

ONTARIO

VE3AIB	41	22	1804
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NOVA SCOTIA

W1QCC/VE1	32	20	1280
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ARIZONA

W7QLZ	0	0	0
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by **BYRON H. KRETZMAN, W2JTV**
16 Ridge Drive, High Hills, Huntington Station, NY

RTTY

Amateur Radioteletype Channels

National, FSK 3620, 7140, 27,200, 29,160, 52,600 kc.
National, AFSK 27.2, 147.96, 144.138 mc.

Area Nets:

California	147.85	Mc.	AFSK on AM
Chicago, Ill.	147.70	Mc.	AFSK on FM
Detroit, Mich.	147.30	Mc.	AFSK on FM
Washington, D.C.	147.96	Mc.	AFSK on AM
	147.495	Mc.	AFSK on AM
New York City	147.96	Mc.	AFSK on AM
Livingston, N.J.	146.30	Mc.	AFSK on AM
Buffalo/Niagara	147.50	Mc.	AFK on AM
Boston, Mass.	147.96	Mc.	AFSK on AM
Seattle, Wash.	147.00	Mc.	AFSK on AM
Spokane, Wash.	147.15	Mc.	AFSK on AM
Minneapolis, Minn.	144.90	Mc.	AFSK on AM

An afsk oscillator has many uses around an RTTY ham shack, besides the obvious application of feeding it into the modulator of a VHF transmitter. Many RTTYers build an afsk oscillator right on the same chassis with their converter. A convenient arrangement is to key the afsk oscillator directly with the keyboard contacts. For transmission, the afsk oscillator output is fed into the converter. A polar relay connected to the converter then is used to fsk the VFO. Besides being convenient, there is a technical advantage to this arrangement. The converter, used this way, becomes a regenerative repeater. In other words, the pulses coming from the keyboard contacts are reshaped by the converter. Eliminated are any spurious transient pulses that might result from contact bounce or other irregularities in keying from the transmitting distributor used

with the keyboard. Such irregularities get on the air when the VFO is shifted directly. For reception, the receiver is fed to the converter which then operates the receiving selector magnet(s) in the machine, either directly or via a polar relay.

For work-bench experimenting, Phil Caton, W2JAV, has developed a very portable, completely self-contained "RTTY" Tone Generator. A secondary purpose of this afsk oscillator is to use it as a source of RTTY signals for demonstration purposes. Fellows all across the nation are still talking about Phil's RTTY demonstration at the RTTY Meeting at the ARRL Convention in Chicago back in September.

The photo of the "RTTY" Tone Generator will give you some idea of just how small the gadget is. Oscillator, buffer-amplifier, and battery supply are all contained in a 4" X 2 1/4" X 2 1/4" aluminum "Minibox" (Bud CU-2103).

Fig. 1 shows the schematic diagram of Phil's "RTTY" Tone Generator. Two RCA type 2N109 *pnp* transistors are used. A two-pole-five-position rotary switch *S* controls all functions of the unit. Turning this switch from the OFF position to any other position turns on the internal battery. The other positions provide SPACE (2125-cycles), CENTER (2550-cycles), MARK (2975-cycles), and AFSK. The first three provide constant tones for testing, while the AFSK position connects the KEYBOARD jack *J-1* and the associated

W1PIL, Worcester, Mass

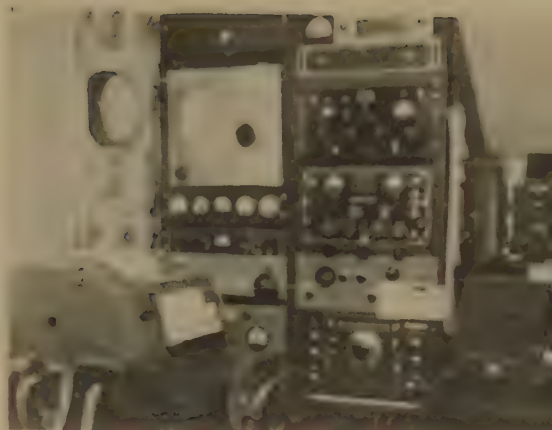
Transmitter: 500 watts

Receiver: HRO-50

Converter: FRA i-f, and Boehme afsk

Machines: Model 26 and Model 15
with perforator from
Model 19

Operator: Will Pilon



of 1N69 germanium diodes and capacitors in the oscillator.

The *L* of the oscillator is the usual 88-mhy telephone line loading coil, a toroid with both ends connected in series-aiding. It can be the #622 or the surplus C-114A field winding coil. It might be obtained from the RTTY Society of Southern California, 372 1st Warren Way, Arcadia, California; or for each from the Tallen Company, 159 Carl Avenue, Brooklyn 5, New York. The shipping weight is about 3-pounds. The un-potting procedure is described in detail on page 72 of the *RTTY Handbook*.

The capacitor values indicated on the schematic diagram are approximate. You will have to substitute various paralleled combinations until you get the correct frequencies. At this point it is necessary to have some standard comparison. Perhaps you might be able to borrow a tuning fork standard from a nearby RTTYer, or if you have a tape recorder you might be able to get another RTTYer to record the tones.

The other knob on the "RTTY" Tone Generator is the GAIN control in the base circuit of the 2N109 buffer-amplifier. The output

transformer *T* is an Argonne (\$2.95, Lafayette Radio, New York City) type AR-109. Listed as 10,000-ohms to 2,000-ohms, its 5-to-1 ratio gives close to the desired 500-ohm output in this particular circuit.

The battery *B* is a 6.5-volt mercury battery, Mullory TR-165R, which was opened up to get the -2.5-volt tap. The second section of the rotary function switch *S* disconnects the plus end of the battery when the knob is in the OFF position.

By the way, if you have any questions about this "RTTY" Tone Generator, Phil asks that you do not write him directly, but that you send your letters to me.

Societies

Last month, while mentioning legitimate incorporated amateur radioteletype societies, we inadvertently omitted NCARTS, Inc. This is the northern California group, legally incorporated in the State of California August 13, 1956. Patterned in many ways after RTTY Inc., the pioneer southern California group, NCARTS holds informal group meetings in the Bay area every two or three months. A Board of Directors meeting is held once a year

W1ZXA, Central Falls, Rhode Island.

Transmitter: 400 watts to an 813.

Receiver: HQ-150

Converter: W9KLB with WØHZR
tuning unit, from RTTY
Handbook.

VFO for fsk: K25KK

Machine: Model 26

Operator: Paul B. Boivin, Jr.



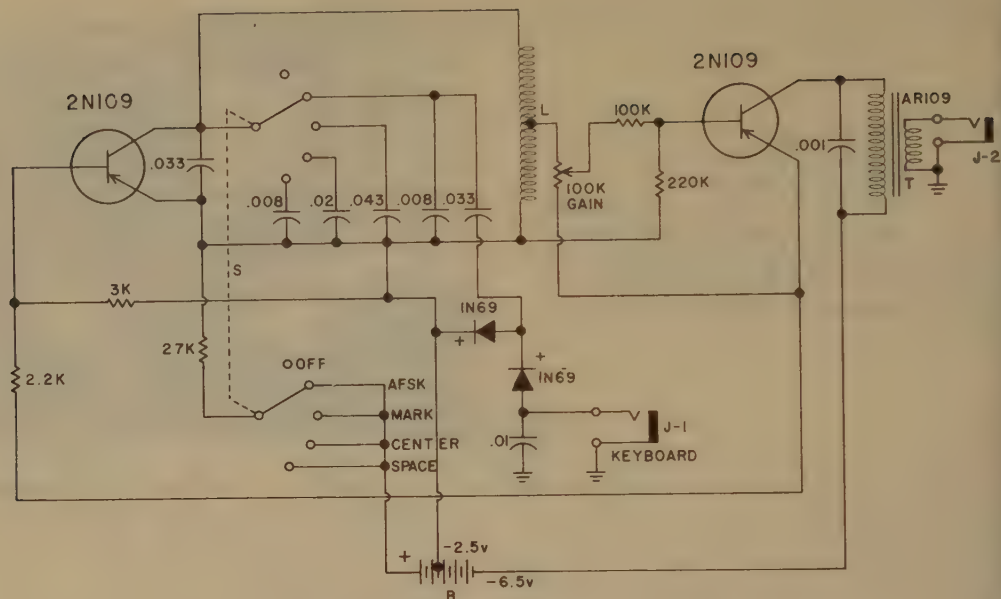


Fig. 1—Schematic Diagram, "RTTY" Tone Generator of W2JAV

to establish policies. Membership in NCARTS requires the filing of a properly filled-out application with the payment of \$5.00, which includes \$4.00 initiation fee and \$1.00 for the current year's dues. Elliott Buchanan, W6VPC, is Secretary, and his QTH is 1067 Mandana Blvd., Oakland 10, California.

To add to the information last month on MARTS, Inc., the Midwest Amateur Radio Teletypers Society, will accept an application for membership, properly executed, with the payment of \$5.00 dues for the year, plus \$2.50 initiation fee. Anyone interested in joining MARTS, Inc., write for an application blank to Robert Atkeisson, WØIQC, Secretary. His QTH is 12301 E. 47 Terrace, Independence, Missouri.

RTTY Sweepstakes

Here are the "early results" of the RTTY Sweepstakes Contest which began on November 1, 1957, and which ran for 30 hours:

STATION	SECTIONS	POINTS	TOTALS
W1ASZ	25	108	2700
W1AW	14	44	616
W1BDI	17	46	782
W1BGW	25	74	1850
W1FGL	12	26	312
W1RBF	11	40	440
W1ZXA	13	39	507
K2HHH	11	32	352
W2KXT	6	18	108
W2RTW	22	86	1892
W2RUI	34	160	5440
W2TKO	30	156	4680

W3NQV	2	4	8
W3PYW	32	146	4672
W4AIY	3	6	18
W5YM	21	80	1680
W6AEE	25	74	1850
W6CG	11	28	308
K6CHR	8	20	160
K6EJM	6	17	102
W6LFF	2	6	12
W6MSG	11	43	473
W6MTJ	27	92	2484
K6OUR	11	31	341
K6OWQ	6	16	96
W6ZVO	4	8	32
W7IWH	17	22	374
W7CSC	7	24	168
W8NIY	17	45	765
K9BRL	15	44	660
W9GRW	11	34	374
W9LDH	17	24	408
W9TCJ	30	114	3420
WØBON	7	14	98
WØBP	37	150	5550
WØDW	11	24	264
WØFQW	15	40	600
WØJHS	5	12	60
WØKXB	13	26	338
VE7KX	17	62	1054
ZL1WB/Ø	11	12	132

(Receiving only, at WØBP)

Bruce, ZL1WB, guest tower-climber at WØBP, working independently from BeeP, racked up a nice score (receiving only) with BeeP's AN/FGC-1X, a Model 15, and a Super-Pro. Two YL-RTTYers, W6LFF and K6OWQ, also participated. Merrill, W6AEE, deserves a large vote of thanks for the timely post-card reminders that he sent out.

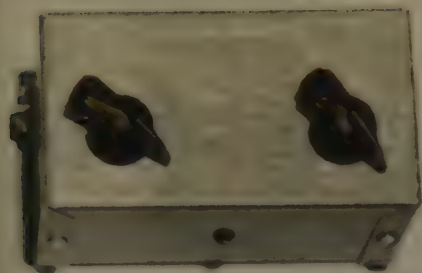
To CQ Subscribers

We sincerely regret that upwards of 3,000 CQ subscribers failed to receive their copies of the January 1958 issue as soon as they should have.

Normally subscribers' copies are sent to the Post Office by us on a pre-planned schedule which allows delivery on schedule. However, through a grievous error on our part, almost 3,300 copies of the January issue were not sent to the Post Office until January 2nd — 10 days later than usual — and consequently this unpardonable delay, and the further Holiday jam at the Post Office, resulted in slow delivery of the subscribers' copies in question.

The circulation department of "CQ" has been harassed by many subscribers who, having failed to receive their copies on time, believed something amiss at the publisher's office. Such was not the case. We take this means of expressing our regret to all who were inconvenienced by our shortcomings.

Blanchard Press
Printers of CQ



"RTTY" Tone Generator of W2JAV

OBS

Official ARRL and NCARTS bulletins are sent out on RTTY according to the following schedules:

Tuesday	2015 PST VE7KX 7144 kc
Wednesday	2000 PST W6VPC 3620 kc, 147.29 Mc
Wednesday	2000 PST K6KFF 6-meters
Friday	1700 PST W6VPC 14,330 kc, 147.29 Mc
Friday	2015 PST VE7KX 7144 kc
Saturday	1400 PST W6ASJ 7140 kc, 147.29 Mc
Sunday	1400 PST W6ASJ 7140 kc, 147.29 Mc

K6OUR is alternate OBS to W6VPC and W6ASJ, and all would appreciate QSL of these bulletins.

If you have tape equipment, and if you desire appointment as an RTTY OBS, send your request to your SCM, giving frequencies, times and days of the week that are convenient to you.

RTTY in Canada

As could be expected, there is not too much RTTY activity in Canada. There are several reasons for this, probably the biggest is the equipment procurement problem. I get many letters from VE stations asking, "Where in Canada can I get a machine?" I don't know the answer to this question. Maybe somebody in Canada can tell me. Drop me a line if you know of any source of machines in Canada and I will pass along the dope.

Another reason is that Canadian amateurs cannot operate RTTY in any band of frequencies in which A3 is permitted. This means that they cannot operate above 14,150, 21,200, and 28,200 kc. 11-meters is out for the same reason. The same holds true for 40 and 80, and propagation in the far north makes these bands a "total loss."

Let me quote a VE in the far north who

prefers to be nameless: "It seems that very, very few W's tune down into the cw bands, leaving the VE's to run their tapes to tatters calling CQ. Think of the poor fellow who doesn't have a perforator and TD, who sits hunched over a keyboard far into the night, pounding out whatever he pounds out in the way of a CQ, who is finally rewarded by someone coming back on cw at about 10-wpm telling him that his fist is so lousy that all he can make out is his call letters and something that which sounds like he is saying 'RTTY' at the end."

So, who is active in Canada? VE3BAD in Toronto, VE3ATC in Montreal, VE7KX on Lulu Island, and a new, unverified, report of W3UAK/VE8 and W3BXN/VE8. Any additions or corrections?

Here and There

W8PYQ in Battle Creek, Michigan, is waiting for his Model 26 with a TU all finished and waiting, too.

Dave, W1PBS, has been noticing that quite a few RTTYers have been working hard for those special QSL's sent out by the FCC for over-time transmission. (You gotta sign, with International Morse, once every ten minutes or less.) Dave uses a timer from an old washing machine. He put a stop in at the ten minute point and he gives it a twist just before hitting the keyboard. A bell dings when the ten minutes run out.

K0HRX in Marion, Iowa, would like to trade a 1.5 kc or a 2.1 kc Collins mechanical filter for a working Model 12, with keyboard. (That sounds like a good deal. I'll bet he would swap both for a Model 26!)

W6SEW, John Porep, is now with GE in Tokyo. W4JSS, ex-W2AOJ, Scott Magness, is now in Beirut, Lebanon, with the CAA. W7VBH of Portland, Oregon, is dusting off his Model 26 after a 3-year lay-off.

W0BP and W6VPC are on 15-meter RTTY. (Have you listened to 15 lately? It looks real good for long-haul RTTY.) W0QPP and W6RDJ were heard working 20-meters, near 14,340 kc.

RTTY Handbook

Most active RTTYers know by now that W2NSD and W2JTP got their heads together last summer and finally put together that *RTTY Handbook* that had been in the works for such a long time. This book should answer most of the questions, both technical and operational, that usually bother a fellow just getting interested in this fascinating phase of amateur radio. Described, of course, are the machines themselves, as well as receiving converters and RTTY exciters.

To get your copy, send \$3, check or money order, made out to "RTTY Handbook", to RTTY Handbook c/o W2JTP, 16 Ridge Drive, High Hills, Huntington Station, New York.

73, Byron, W2JTP

DX DX DX DX DX DX DX DX

WAZ

The big WAZ rush is on! Nearly 100 packages of cards from WAZ applicants have been received in the past few weeks! We are literally inundated in a sea of QSL cards and Honor Roll lists. All packages of cards have been dated upon receipt and certificates will be issued in that order, starting as soon as this column is in the mail. We expect to be up to date with the certificates in a few weeks, and a long listing of the fortunate winners is planned for the next issue. Don't miss it!

When the WAZ lists are current, we'll then dig into the Honor Roll pile and attempt to straighten it out. If we are lucky we should have a complete round-up of the Honor Roll list in the April issue.

Please mail all WAZ cards and applications, Honor Roll lists, requests for forms and instructions, and all other correspondence relating to DX to W4KVV at the address at the head of this column. We'll give you the best service we possibly can.

DX NEWS

The big reason for the WAZ rush, of course, is Zone 23's JT1AA. His cards are flooding the world, resulting in the biggest scramble in WAZ history. It's likely to continue, too, for Ludvik remains active, although not at the pace set when he first appeared. He has moved his ham station to his home in Ulan Bator for greater convenience and to avoid some of the terrible Siberian weather, advises Ed, W6DZZ. Although the poor antenna facilities in the town have affected his strength somewhat his signals are still adequate. He was very active during the Czechoslovakian DX contest December 8th, and he can be found almost daily at 1400GMT on 14062 or 14093 kc.

The prospects of JT1AA going on phone are poor, however. Ludvik speaks no English, and has shown little desire for phone operation. OK1JX is considering shipping him a NBFM exciter in the event Ludvik changes his mind, but chances are remote at this writing. Asking him to listen for your phone signals will do you little good, for he will not QSL phone contacts as "worked" until he himself is on phone. The "heard" card you may receive for your pains would be ineligible for DXCC or WAZ.

YK1AT also continues his lading-out of a new country for many, in company with OK1MB as master-of-ceremonies. They were both very active in the Czech contest.

But the big DX commotion these days is over HV1CN, Vatican City. Dominico's sudden appearance on 14 mc phone created a panic that still continues. Some of the top W phones have now worked HV1CN, including W8JIN, W8QJR, W8BKP, W8JBI, and W8BRA, but they represent a negligible percentage of those hopefuls who have expended breath and many KWH's in futile calls.

Two of the major obstacles to working this excellent DX are language problems and Dominico's brief operating periods. Because of the proximity of the Vatican Radio BC station, we understand he is able to operate only when the broadcast transmitter is off the air. W8JIN informs us he shows up on 14120 kc phone between 0610 and 0645GMT three or four times a week (not Sundays!), and occasionally from 1700 to 2000GMT. He is using 300 watts to a BC610, with a dipole 380 feet above the ground! He is planning to operate 10 meter phone as soon as he can convert the BC610 for that band.

Since Dominico knows no English, most Stateside QSO's have been made with the aid of sympathetic, bilingual Italian stations such as I1AMU and I1CL, who are handling HV1CN's mounting QSL chores. I1AMU especially has been literally swamped with requests for skeds and assistance in attaining this choice DX. Some frantic W's have even sent cablegrams to arrange skeds! But I1AMU advises us not to get excited; HV1CN will be there a long time.

When Dominico first appeared there was, of course, considerable speculation as to his legitimacy. Those doubts, however, have now mostly disappeared. During a QSO with CN8MM a skeptical Italian amateur dropped in to make sure that all was above-board—and it was. HV1CN, he found, is operating with full official permission.

The first HV1CN QSL to reach the States (to our knowledge), a home made card prized by Frank, W8QJR, has been accepted by ARRL for DXCC credit. K2OPJ informs us the first HV1CN printed cards were messed up by the printer, but 3,000 more are now coming off the press.

ancient Carthage is the GM of Roger Wolf, 3V8AO. At present Roge is very active on 21 mc shooting for his WAS. (Photo courtesy W0BPA)

PJ2AX, Pop Wilson, Aruba, NW1., runs a Globe Champion to a Globe spanner Triband beam. Receiver is a HRO-50T with RME DB-23. PJ2AX is also active on 6 and 2 meters. (Photo courtesy K2DHW MM)

Another McNeil, W7FMX, of Salem, Oregon has DX'ed to the tune of 190 countries and 39 zones. Mac has a Ranger pushing a 833A with a Genset 2 element beam. A retired Railroad man Mac has three daughters and three grandchildren. (Photo courtesy Willamette DX Bulletin)

The CR8AC wheel of good fortune continues to go 'round and 'round, and where it stops nobody knows. We've received notes from those that believe Raul spins his receiver as if like a carnival gaming wheel at the end of each QSO, and works the next station that pops up on that chance frequency. We think this may be stretching the truth a bit, but there's no doubting the difficulty of attracting CR8AC's attention. We have no tips or hints to offer, except to keep trying. Sooner or later the combination of timing and frequency will click in your favor, and you'll work him with no trouble. As Tom, W4CIN, put it: "I must have spent at least 5 hours chasing him. At last week I ran across him at 1100 GMT, gave him a 2-by-2 call 5 kcs off, and he bounced right back. It was just a matter of hearing him at the right time, it seems."

And so it goes, in DX history's greatest hey-day—right now! Considering J11AA, YK1AT, CR8AC, VQ8AS, and all the other exciting DX now current considering HV1CN, amateur radio's last hold-out in the western world; considering the sunspot activity now at its greatest peak in centuries and probably the ghastliest of our lifetimes, all things considered, we never had it so good—and we may never again. Enjoy it while you may, fellows, these are exciting times.

Judging from the notes and letters crossing his desk lately, most of us are. Certainly receivers are getting a big work-out these days, and from the pile-ups and many of the prominent signals we hear, we suspect transmitter power is being consumed in incredible quantities, too. As Frank, W2AXR, summarizes: "I suggest we request a special postage stamp issue commemorating 1957-58 as the period of the greatest pile-ups in radio history. No records may have been set for QSL's received, but the %&%\$ b KwH's should change for weather to semi-tropical!"

DX NOTES

Ron, VQ8AS, Rodriguez Island, now accredited a separate country for DXCC and the CQ Honor Roll, has been giving some attention





HS1A, Bangkok, Thailand, has been a very popular catch on 14 and 21 phone. Op Ken Barzee also holds the calls of W6JOT and K41VP. HS1A has worked over 100 countries since last February.



Antenna photo shows a two element 20 meter beam over a three element 15. QSL go via W6FKH. (Photo courtesy K6GLC)

to 7 mc DX. At this writing he is maintaining nightly skeds on 7006 kc at 0100GMT, looking for WQSO's. Among those who have accommodated him are W8JIN, W8FGX, W8BKP, and W4KVX. His signals have been exceptionally good for that hour and frequency, peaking S6 to 7 at times.

KC6JC, Cav, on Truk, is active Thursday mornings on 14025 kc with skeds with W3DVE, reports Fred, W2TVR.

Beda, OK1MB, says scratch one ZA1KM—he's a pirate. Sorry! Also, OK3AL says the same of JT1KAA, who insists he's the second operator at JT1AA and uses 3 kw, although his signals are no stronger, but much rougher, than Ludvik's 100 watts. W1BPW reports working the queerest odd-ball of them all, however—one ZZ3ZZ, who insists, with deadpan earnestness, that he's located on Tombstone Island! (Oh, brother!)

Bill, W0CPM, operated as VP2KM from the Leeward Island's November 25th, 26th, and 27th, while on vacation in the West Indies. He promised to QSL 100% when he returns home, so send your cards to his Omaha address. Bill plans to return to the West Indies the latter part of February, where he plans to attend the carnival in Trinidad February 21st and 22nd before going on to St. Kitts, with stops at Grenada and Barbados. Look for him at any or all these places.

If you've been wondering about XQ8AG, it's at one of the U. S. missile observation bases in Chile, advises George, W8BKP. QTH: U. S. Military Reservation, Antofagasta, Chile. This station operated with the call W2RYX/CE until November 20th. We can't account for the XQ prefix.

VQ9HAY, Seychelles, will work no one but VQ4ERR, VQ4AG advises us via W8BKP. A new phone rig now enroute VQ9HAY may change the situation, however. FB8CD has moved to a new home on Comoro, continues W8BKP, and he intends to work 21 mc mostly

in the near future. He was heard on 21135 kc phone this month (December) by Frank, W8QJR, who reported him S7 between 1830 and 1900GMT. He worked CO2BL for his only contact in the western hemisphere. FL8AB has been heard on 14140 kc CW frequently, although he may leave FL8 for Madagascar in March or April. He plans to return home to F8UD later this year.

CN8IF should be operating from Monaco by the time you read this, reports Len, W4KZF. He expects to be there three or four weeks, using 100 watts on all bands. And VS9AG/ZD3 has arrived in Gambia, says Tom, W4ML. He hopes to be active from there a few months, after which comes possibility of assignment to VQ6 or Y12.

FW8AA must have the bugs out of his ac generator, for he's been quite active on 14340 kc CW at 0630GMT. From FA9RW via W1BPW comes word of FY7YH, a new one in French Guiana. He works 14 and 21 mc CW mostly, and is active usually at 0400GMT. SP5LM/Spitzbergen is on the air, but has crystals for commercial frequencies only, reports Phil, W3SOH. He's building a VFO and may be on the ham bands by the time you read this.

PA0RJG is reported enroute JZ0 and plans to operate from Biak for one and a half years, or three years if his family follows him. He will work 14 mc only.

VR1A, Gilbert Islands, has been active mostly on 21040 kc Saturdays and Sundays at 2300GMT, advises Jim, W8JIN. He has a 5,000 foot (each leg) Vee beam, but uses a 2-element rotary beam most of the time, although the Vee beam has indicated 20 db more gain in its favored directions.

In the December issue of the NCDXC "DXer" Don Wallace, W6AM, lists a bunch of prefixes he's still missing and asks the west coast boys to call him at his ranch if they hear any of them. He states his ranch phone number

FRONTIER 7-4120) and requests they allow the phone to ring a long time, as he may be outside harvesting rhombies!

That's all, brother!

QSL NOTES

K6EXO advises us he is now handling QSL's for ZK1BS for QSO's after October 22, 1957. A stamped and addressed envelope with your card to Harvey Shore, 1815 Preuss Rd., Los Angeles 35, Calif., will produce rapid results—otherwise cards will go via the bureaus.

W2ZGB has received the VS9AG logs up to October 20, 1957, and will QSL 100% via the bureaus. But Gabe emphasizes he cannot furnish ST2NG cards VS9AG's previous call, or he has none of those logs.

W1FH is helping VQ4AQ with the VQAS QSL chores by distributing the Rodriguez cards destined for W1FH's. If you are expecting a card from VQAS a stamped and addressed envelope to Chas Mellen, W1FH, 28 Woodley Ave., Boston 32, Mass., may help its prompt arrival.

From the Salem (Oregon) Capitol-Journal, via the WVDXC Bulletin, comes this news item: "LONDON (AP)—The Soviet Union today said it would send 'special cards' to radio amateurs around the world who reported reception of signals from its earth satellites. Moscow Radio, in a broadcast beamed to North America, told the hams to report their receptions to Radio Magazine, Moscow."

The flush of JT1AA, zone 23, cards in this country has resulted in at least one practical joke, played by Bob, W0QVZ, on Ted, W0NTY. Ted has been feverishly awaiting the arrival of the JT1AA QSL to complete his WAZ, and his impatience has been something more than unusual. Finally he received a special delivery with "IMPORTANT!" QSL "FROM MONGOLIA!" annotated on the envelope. He bit, with all the innocence of the young-at-heart. He tore it open only to find a card from Mike, UA6OM, Buryat-Mongolia, zone 18. It was forwarded, he discovered, by W0QVZ.

The long-distance telephone lines from Minnesota to Iowa trembled with some high-blower, Minnesota-type cussing that all but lost them their connections, but Ted received only Bronx cheers in his face for his trouble.

But now things have changed somewhat! Ted did get his JT1AA card, but W0QVZ wasn't—as yet. Clutching his 40 cards as though they were messages for Garcia, Ted dashed breathlessly for an airplane and flew to Burlington, Ky., to apply for his WAZ in person. Tucked away in a pocket were also 39 cards from W0QVZ, to be accredited toward WAZ pending arrival of that JT1AA gem. On his return to St. Paul, Ted again activated the Minnesota-Iowa phone lines to report the success of his mission, and again they trembled, this time with Iowa-type cussing and Minnesota huzzas, for Ted had mentioned, in passing,

that Bob's 39 cards would be returned—one at a time, every other week!

"And even worse," confesses Ted, "I got Al Smith, the QSL-Impressario for us W-Nothings, to make a notation on the outside of Bob's last card consignment; 'Don't know if you still need Mongolia, but, . . .' Al went along with the gag, thinking, as he put it, that Bob would open the envelope so fast that no permanent hurt would be done to his nervous system."

See you next month!

73, Don, W4KVVX

THE OHIO VALLEY DX BULLETINS

If you would like much faster and more comprehensive DX news and articles than time or space in this column can permit, we suggest you try the Ohio Valley DX Bulletins, edited and published by W4KVVX. Its 40 or more issues a year are distributed only via first class or air mail, for greatest possible speed, and costs but \$5 annually for first class service, or \$6.50 air mail. Two month trial subscriptions are available for \$1 first class, \$1.25 air mail. Sample copies may be had for the asking. Write W4KVVX (address at the head of the DX column) for further details or for your membership to this excellent service.

Addresses

- CN8IF—W2SGC, via W2 Bureau.
- CN8JX—Glenn H. Luse, 3906th OPRON, APO 177, PM, N. Y.
- CR8AC—Raul Fernandes, Caixa Postal 32, Vasco de Gama, Goa, Portuguese India.
- DL4BL—(K4ADU) A2C Cliff Watson, AF 14621315 2d ACCS Mob. SQN, APO 109, PM, N. Y.
- FB8XX—Via FB8BC.
- FE8AK—Box 202, Yaounde, French Cameroons, FWA (Will be there until May).
- FF8AC—Box 129, Kankan, French Guinea, FWA.
- FP8AR—Via W2HTI.
- FP8AS—Via W2EQS.
- FP8AX—Via VO1BF. A. A. Drysdale, 95, Forest Rd., St. Johns, N'f'd, Canada.
- FP8AY—Via VO1BD. R. C. Peddle Jr., 11 Vaughan Pl. St. Johns N'f'd, Canada.
- HC8GI—E. Bud Devine Jr. Isla Santa Cruz, Galapagos. (No cw used)
- HA8WS—Tibor Hidvegi, St. Istvan UT 2 NR, Mezőbereny, Hungary.
- HB1RS/FL—HB9RS, Max de Henseler, 49, Servette, Geneva, Switzerland.
- HL2AM—Major F. B. Barnes, Box 35 HDQTRS 314th AD, APO 970, PM, San Francisco, Calif.
- HL2AM—Prior to Oct. 1st. Major D. A. Bartol, HDQTR 2nd AF/SAC Barksdale AFB, La.
- HL9KT—(Seoul, Korea) QSL via Van, W2SUS.

[Continued on page 110]

by **KENNETH B. GRAYSON, W2HDM**
110-20 71st St., Forest Hills 75, N. Y.

SURPLUS

an introduction to surplus equipment

Equipment and Service	Function	Freq Range Megacycles	Conversion Band	Conversion Required	Value \$	Original Voltages	Misc. Notes
TCS (Navy)	R-T 2 units	1.5 to 12	160 to 40 (higher if reworked)	Power Sup.	35 per unit	12, 24 DC 100 AC	Excel. buy MO and Xial PB Notice 25 W CW
T02 (Navy)	T	100-400	144 & 220	Heavy Power Supply	X	Various	Very big for power out. Pretuned Channels
R02 (Navy)	R	200-400	144 & 220	Power Supply	X	Various	FB for VHF
TBS (Navy)	T-R 2 units	60-80	6 & 10	Power	35 per unit	Various	Xial Control on both 50W A3
MBF (Navy)	T-R	60-80	6 & 10	Motor-Coil Changes	30	110V AC & DC	SW A3 FB U in Good Condition
TBX (Navy)	T-R	T 2.0-4.5 R 2.0-8.0	80	Power Supply	X	Hall & Hand Gener.	SW CW 3W A3
TBY (Navy)	T-R	27-80	10 & 6	None	30	Battery	MOPA has built in Calibrator
TBW (Navy)	T	0.35-1.0 3-18	80 40-20	None	45	Gas Gen	FB Notice 100W CW 25 A3
NAL (Navy)	R	0.30-22	180 to 30	None	30	6V Fil 180 W	TRF Rec
RNM (Navy)	R	0.2-3.0 3.0-20.0 (2 units)	80-30	Power Supply	X	6V Fil 200 B+	Compact Selective
NH2 (Navy)	R	2.0-5.8	80	None	40	Batteries	Miniature Superbet
ARR (Navy)	R	0.185-9.05	180-40	Power Supply	20	78 DC	FB for Conv. Variable IF
GF (Navy)	T	2.0-4.5 6.0-9.05	80 to 30	Power Supply	X	14 or 28	Has VFO
BC-191	T	1.5-18	180 to 30	Power Supply	X	12 VDC	Plug-in heads VFO or 5 Xial 400 W CW 100 W A3
BC-221	Frequency Meter	0.02-20		Batteries	100	-----	Can be used as VFO
BC-375	T	1.5-18	180 to 30	Power Supply	50	24 VDC	Plug in heads VFO or 5 Xial 400 W CW 100 W A3
HC 610	T	2.0-18	80 to 30	Power Supply	24	24 VDC	VFO or Xial 400 W CW 200 W A3
HC 624	Receiver portion of SCR-522 Equipment						
HC 625	Transmitter portion of SCR-522 Equipment						
HC-632	R	100-156	144 Mc	none	40	1.0 VAC	One channel Xial Control
HC-645	R-T	420	420 220 Mc	Fair amount of Conversion Required	30	12 or 24 VDC	IFF Set MOPA superregener receiver
HC-699	R-T	1.8-4.5	80 (also Marine use)	Power Supply	90	24 VDC	4 Xial plus VFO 15 W A3
BC-779	R	0.1-0.4 2.5-20	80 to 30	none	X	110-VAC	Similar to "Super Pro"
BC-794	R	1.55-40	80 to 10	none	X	110-VAC	Similar to "Super Pro"
HC 905	Oscillator and Field Strength Meter	140-225	44 & 220	none	8.00	Battery	General purpose

Equipment and Service	Function	Freq Range Megacycles	Conversion Band	Conversion Required	Value \$	Original Voltages	Misc. Notes
BC-1032	R	75 Mc	Any band	Power Supply	4.00	24 VDC	Marker Beacon Superregenerative rec.
BC-1208	R	0.185-3.425	Q-Ser	Power Supply	4.00	24 VDC	24 V Plate and Fil. Earphone output
BC-1325	R-T	27-39.5	95-50 Mc.	None for 30 MC	30.00	6 or 2 VDC	4 W F3 See CQ Dec 37
GO-9 (Navy)	T	0.3-6.6 3.0-18.1	80 to 30	Power Supply	X	120V at 800 cps and 28VDC	VFO 100 W CW 70 W A3
ATD (Navy)	T	0.2 to 18	180 to 30	Power Supply	50.00	24 VDC	50 W CW 40 W A3 (convertible) 4 plug in units
AN-ARC-1	R-T	100-156	144 Mc	None	X	24 VDC	10 Xial channels 8W A3
AN-ABC-3	R-T	100-156	144 Mc	None	X	24 VDC	Auto-tune 10 Channels Xial control 6 W A3
AN-ARC-4	R-T	140-144	144 Mc	None	30	12 or 24 VDC	4 Channels Xial Control 6 W A3
AN-ARC-5 (HF Band)	R-T Separate Units	0.5-5.1 (T) 0.10-3.1 (R)	Any	Power Supply	4.00 up to 24	24 VDC	See "Command Set" Handbook
AN-ARC-5 (VHF-Band)	R-T Separate Units	100-156	144	Power Supply	20 per unit	24 VDC	4 Channel Xial Control
AN-ARR-11	R	0.2-0.5 1.5-18.1	180 to 30	Power Supply	X	24 VDC	6 Band Receiver
AN-ART-12	T	0.2-1.5 2.0-18.1	180 to 30	Power Supply	250	28 VDC	11 Preset VFO Channels
ATC (Navy) AN-APN-1	Navy equivalent of AN-ART-12 R-T	420	420	Power Supply	5.00	24 VDC	MOPA 1.2 Watt Needs Modulator
AN-ARR-2	R	234-258	220	Power Supply and Oscillator	4.00	24 VDC	Requires separate local oscillator. Fine for VRF parts
SCR-508 SCR-528	R-T	20-27.9	10 & 15 M.	Power Supply	35	12 VDC	30 W F3 Xial Control 10 Channels
SCR-509 SCR-510	R-T	20-27.9	10 & 15 M.	Battery or Vibrapack	X	-----	1.8 W F3 2 Xials
SCR-522 SCR-542	R-T	100-156	144 Mc	Power Supply	40.00	24 VDC 12 VDC	4 preset Xial Channels 6 W A3
SCR-538	R-T	3.5-8.0	80 M	Batteries	120 pair	Batteries	0.02 W A3 (BC-511 is individual handy-talkie)
SCR-608 SCR-628	R-T	27.0-38.9	10 M	Power Supply	35	12 VDC	30 W F3 Xial Control 10 Channels (BC-603 & 604)
SCR-609 SCR-610	R-T	27.0-38.5	10 M	Battery or Vibrapack	X	-----	1.8 W F3 2 Xials

This month's SURPLUS column takes on a new shape. As was mentioned last month a tabulation of usable surplus equipment requiring little or moderate conversion is included this month and will be kept up to date for CQ readers. Many of the equipment's listed are just arriving on the surplus scene. Others are old hand-bys. A few just exist in the hands of the lucky or rich.

In some cases the mere application of power is all that is necessary to get it on the air. A few require extensive coil and other component changes. Keeping in mind that not all of our readers are engineers or have adequate facilities for major overhauls. Our recommendations are to the degree of conversion will be an index of the complexity of the problem. In most cases the equipment has been worked on by myself or by friends. In every case the equipment has been examined and the recommendations are honest.

While prices vary from area to area or even from store to store, the price column is at least an indication as to the approximate price of the equipment in good condition, and was tabulated from CQ ads and the various flyers sent out by the many surplus dealers. CQ does not intend to set price policy in any event. Price is dictated usually by the availability of the equipment and many other economic controlling factors.

Note too that the power listed in the Misc. Notes column is actually the power output of the equipment and not plate power input. The emission notation A3 is of course AM while F3 is FM. When converting FM equipment to AM remember that a modulator will be required and that appropriate changes will be necessary to the i-f stages of the receiver as well as to the receiver detector. Usually this will not be too complicated.

73, Ken, W2HDM

What's in a name?

by Al Edwards, W2BOH

86-33 253rd St., Bellerose 26, N. Y.

Names of hams with ham terms for names.

Call	WOMBW	Shields	KOCNH
ohm	W1DIA	Pole	W2VQC
ohms	W9DAC	Bar	DI9EJ
6 att	KN9CTE	Dial	K5ADC
1 att	W7AQO	Link	W2VKF
6 ester	W9BIE	Links	W9QIM
power	W0VPO	Band	W2SMN
ream	W3UQO	Coil	K2QFY
reams	W8AAL	Key	W5CDO
owers	W9WBD	Peak	W1BWN
loop	W0ZIA	Clamp	W5NFJ
hang	W0TIR	Null	W8VKP
snack	W9AVY	Plate	W2RRU
driver	W8BPD	Rod	W2KVY
olicer	W1SCZ	Pulley	W2TQQ
rimmer	W0NEL	Hook	W1CGV
ipple	W9SIZ	Gear	K0BXM
ums	W9HKP		

2 Spark W9UWK Sparks W3QVK

Shock W0JWF

Hardware and Tools for hams:

Trace	W0FJY	Hammer	W9AUU
Drill	K9CLS	Bolt	W1DGA
French	W0MQB	Screws	W5UQC
File	W9PMN	Tack	KN0CVG
Files	W0GK	Staples	KN9CPZ

Mason and Dixon are K2KTM and W1DYY.

If you need Maine for WAS, work W2CCT.

W9EUO is Meek but W2GDN is Meeker. W9ITE is Lovely. W5SCX is Pretty. W0KYM is Kind. W3KYI is Fine. W0QZR is Gentle. K6ACC is Gay. W0QMQ is Jolly. W2DSU is Merry. W8AAH is Happy. W9UDZ is Pleasant. W9PRU and K2COB are Neat and Sporty.

W3WBQ is Famous. W1CIC is Frank. W9ZMG is Just. W0ZTI is True. K0BQE is Earnest. W2GCO is Good. W3WBH is Queer. W5ITD is Strange. W8VQM is Bold. W2DOF is Wild. W8ZVO and W0SEM are Grim and Moody.

K9AFP and W2VCU are Hale and Hardy.

W0UCV is a Dear. W1AGL is a Darling. W1EHZ is certainly a Comfort but W0EHQ is a Brute.

W8WUU and W8WUT are Miracles!

W 3 K J U is an Oldham.

but

W 2 N D and K 5 E A D are Younger!

[More of this nonsense on page 109]



by **LOUISA B. SANDO, W5RZJ**
212 Sombrio Drive, Santa Fe, N. M.

YL-OM Contest in March

The 9th annual YL-OM Contest is set for March 1-2 (phone) and March 15-16 (cw). Here's your chance, fellows, to make contacts toward those YL awards—YLCC (for 100 confirmed YL contacts), WAS/YL, and even WAC/YL. And you might pick up a YL club certificate or two as well as the gals will be out in force just for your benefit. Now come on, gals, let's all be in there pitching!

Results: 18th YLRL A.P.

Congratulations to the winners in YLRL's 18th Anniversary Party held last Nov. 6-7 (phone) and Nov. 13-14 (cw):

- 1st CW—W7COX, Fran Viers, 2970—cup
- 2nd CW—W4RLG, Frances Shannon, 2280—certificate
- 3rd CW—W6PCA, Opal Jones, 2054—certificate
- 1st phone—W3URU, Sarah Hengen, 9938—cup

Yls attending the Ham picnic at St. Cloud, Minn. Aug. 1957. L. to r., seated: W8ATB, W0KMP, W0QVQ. Standing: W0VYL, K0ERQ, K0DIB, W0ETY. Photo courtesy W8ATB.



9th Annual YL-OM Contest Rules

- Phone:** Start Sat. Mar. 1, 1958 at 1:00 p.m. EST. End Sun. Mar. 2, 1958 at 12 midnight EST.
- CW:** Start Sat. Mar. 15, 1958 at 1:00 p.m. EST. End Sun. Mar. 16, 1958 at 12 midnight EST.
- Eligibility:** All licensed OM, YL and XYL operators throughout the world are invited to participate.
- Operation:** All bands may be used. Cross-band operation is not permitted.
- Procedure:** OMs call "CQ YL." YLs call "CQ OM."
- Exchange:** QSO number; RS or RST report; name of state, U. S. possession, VE district, or country.
- Scoring:**
- (a) Phone and cw contests will be scored as separate contests.
 - (b) One point is earned for each station worked, YL to OM, or OM to YL. A station may be contacted no more than once in each contest for credit.
 - (c) Multiply the number of QSOs by the number of different states, U. S. possessions, VE districts and countries worked. Maryland and the District of Columbia count as one state.
 - (d) Contestants running 150 watts input or less at all times may multiply the result of item (c) by 1.25 (low-power multiplier).
- Logs:** Copies of all phone and cw logs, showing claimed score, must be postmarked not later than March 31, 1958 or they will be disqualified. Please file separate logs for each mode of operation. Send logs directly to YLRL Vice President Kay Anderson, W4BLR, 5210 Raleigh Road, Richmond 23, Va.
- Awards:**
- First place phone YL—cup
 - First place phone OM—cup
 - First place cw YL—cup
 - First place cw OM—cup
- Winner of phone cup is also eligible for cw cup. Certificates will be awarded to high place cw and phone winners. The highest scoring contestant in each district, where three or more logs are submitted, will receive a certificate.



W9STR, Betty Sandberg, YLRL's editor for 1958.

2nd phone—W6QGX, Harryette Barker, 9275—certificate
3rd phone—W4HLF, Arlie Hager, 9100—certificate

Club gavel to San Diego YLRL, 4841
For a picture and write-up about W7COX, see "Long-time YLs, 1932," CQ, Jan. 1957. He had 66 contacts in 36 sections to make the high cw score. W3URU, Sarah (see photo here) had 150 contacts in 53 sections to place first on phone.

According to K5LIU, Mildred, YLRL's 1957 vice president who handled the contest, there were 132 phone logs submitted showing 28 YLs participated, 15 DX countries were represented. In the cw section 70 logs were submitted showing 146 YLs active in this portion. All who participated agreed it was wonderful fun, and many are now much closer to AS YL.

Club entries (average score)

San Diego YLRL	4841
Los Angeles YLRC	4071
Penn-Jersey YLRC	2834
Pt. Petersburg Amateur Radio Club YLs (SPARCYLS)	2618
Ladies Amateur Radio Klub (LARK)	2604
Washington Area YL Amateur Radio Klub (WAYLARK)	975

YLRL Editor

Due to tightness of space in the December issue, the write-up about YLRL's editor of "L Harmonics" for 1958 got squeezed out. W9STR, Betty Sandberg, of Chicago, has

already served YLRL as assistant editor. Licensed in 1955, she and her OM W9STQ use a Globe King 500. Betty is active on 10 and 20, especially in RACES and on the Night Owl net. Vault manager in her neighborhood bank, Betty's other interests are rocks and minerals, photography, and a collection of 200 pairs of ear-rings. 8-year old Connie completes the family.

YLRL's third district chairman for 1958 is W3DBN, Florence Collins.

With the Clubs

Another brand new YL club to report—GAYLARK!

The Gulf Area YL Amateur Radio Klub (GAYLARK) was founded at a meeting held Nov. 19, 1957. Officers are: President, K5BJU, Harriet; vice president, W5DRA, Yetive; secretary-treasurer, KN5MIZ, Alverta; publicity chairman, K5LIU, Mildred. Other members include W5ERH, W5EGD, and K5CZZ. GAYLARK extends an invitation to any YLs in the area surrounding Houston whom they might have missed to join them. They welcome into



W3URU, Sarah Hengen, won the cup for making top phone score in the 18th YLRL A. P.

membership any YL holding any class of license. Dues are \$2.00 a year and meetings are held at the homes of members at 7:30 p.m. on the last Tuesday of each month.

The Penn-Jersey YLARC offers a certificate to any amateur who works 15 members of the club, on any band. Send application and QSLs to the custodian with return postage. Custodian: W3GTC, Carolyn Currans, P.O. Box

523, Norristown, Penna. Members of the P-J YL club include: W3's AAU, APT, BIW, DBN, FTP, SLF, UKE, URS, VLX, VNN, WML, ZCF, HTC, CUL, URT, URU, GTC, GTP; W4VCB/3; K2ROL.

PARKA, the Polar Amateur Radio Klub of Alaska, which was founded in July, 1955 with 26 members, is still very active. President for 1957-58 term is KL7ALZ, Geraldine; vice president, KL7BVQ; secretary, KL7AYA, Doris; treasurer, KL7CCP, Pat; activities chairman, KL7GOH, Lou. The club holds meetings on the first Tuesday of each month. Annual dues are \$1.00.

PARKA is awarding a certificate upon the following conditions: Awarded to any amateur in the world who successfully completes two-way contact with seven (7) paid-up members of PARKA; operation on any authorized band, any authorized mode, cross-band operation not valid; contacts valid from Jan. 1, 1957 forward; when sending cards for certificate, please enclose a stamped, self-addressed envelope. Send application and cards to: Geraldine Nichols, KL7ALZ, c/o Alaska Railroad, Anchorage, Alaska. When working a KL7 YL ask your contact if she is an active

and paid-up member of PARKA if you are interested in the certificate. Current members include: KL7's YG, AZI, ANG, BLL BJD, AZL, AYA, BOD, RN, RZ, BOH, BVC, BVQ, BBL, CCP, BWG, CDC, BZI, BOF, BHE.

Current officers of the Chicago YLRL are: president, K9CQF, June; vice president, Elsie Harper; secretary-treasurer, W9GME, Grace; P/C, Lillian Rochelle.

The L.A. YLRC welcomes these new members: W6's EPQ, QVK; K6's LMV, TFN, ZCR; WN6's VWH, YIG, KN6ZWQ.

The YLs and XYLs of the Waco area have formed an organization known as the XYLs of Central Texas Amateur Radio Club. Numbering 16 members, including W5CGE, K4AHZ, K5MRR and W5TSD, their aim is to promote fellowship among the Central Texas Amateur Radio Club members and their XYLs.

Here and There

The Wednesday morning Welcome Net meets at 9:00 a.m. EST on 3900 kc. with W8ATB, Esther, as NCS. . . . Congrats to K6OQD, Jean, on making her 3rd BPL in a row. . . . K6JRL, Peg, is reportedly the first YL in the L.A. area on 220 Mc.

33, Louisa, W5RZJ

Here are the individual scores by district. An asterisk (*) denotes the low-power multiplier was used.

CW	K8EKX W8WQE	20* (Conf.)	W4CWV LKM	4513* 4400*	W7FDE W7GUQ	309* 48
W1HAG	775*		W4WJX	3353*	W8FPT	7226*
W1VXC	260*	1950*	W4BIL	3384	W8HUX	4600*
W1TW	(Conf.)	1508	K4IRT	3040	W8VRH	1740*
K2JYZ	1875*	853*	W4TVT	2765	W8EIR	1516
K6VUE/2	531*	585*	W4SGD	2516	W8RIR	1470*
K2DXD	413*	158*	W4JUF	2126*	W80TK	925*
W2QZZ	158*		W4RLG	2015	W8DNF	594
W2BNC	(Conf.)	2040	K4BKT	1080	W8WUT	344*
W3UTR	1813*	1631*	W4PPQ	630		
W3GEU	1290*	1064*	W4BLR	75*		
W3URU	1268*	495*	W4WPD	(Conf.)		
W3TSC	468	60*	K4EUG		W9UON	5250*
W3CDQ	61*				W9RUJ	3034
W4RLG	2280*	KH6CKO	K5BNQ	7369*	K9CCO	2723*
W4BLR	1860	KH6BGE	W5HWK	6240*	W5MPX	2170*
W4HLF	1849*	KL7ALZ	W5JCY	4186	W9GME	1830*
KP4ZV/4	1020*	KL7AZI	K5LIU	3226*	W9LOY	1625
K4BKT	912	VE3DMX	K5BJU	2652	K9CQF	1425*
W4BIL	840*	VE3AJR	K5IMD	2243*	W9UXL	1129*
W4PPQ	132	VE5DJZ	W5RZJ	1770*	W9VNG	1025*
K4EQB	64		K5MSE	469*	W9ZXZ	680*
W48GD	(Conf.)		W5ECF	(Conf.)	W9RTH	573*
K5ADQ	1740*				W9MYC	536*
K5LIU	1725*		W6QGK	8275*	W9STR	252
K5BJU	20*		W6JZA	8760*	W9LDK	191*
W6PCA	2054*	Phone	W6WRT	8225*	K9BWL	5*
K6OWG	1643		K6EXV	8188*	W9MLE	(Conf.)
K6QPG	1540*		W6GGX	6738*		
K6BUS	1450		K6QDD	6150*	K8LYV	5518*
K6ENK	1421		K60AI	4050	K8IKL	3093*
W6NAZ	764*		K6KCI	4046*	W8ZWL	2138*
W6WRT	150*		K6PWH	3413*	K8GIC	1528*
W6DXI	59*		K6EXO	3178	K8BTU	640*
K6SYR	38*		W6MWU	2931*	W8IAU	520*
K6HOI	11*		W6JMS	2920		
W6LFF	I		W6DXI	2100*	KH6BGE	6235*
W6JZA	(Conf.)		K6ANG	1856*	KH6CKO	5093*
W6MUY	(Conf.)		W6NAZ	1260	KH6AUJ	2320*
W6MU	(Conf.)		W6EHA	900*		
K6PWH	(Conf.)		K6ENK	350*	KL7AZI	6181*
W7CDX	2970*		W6LFF	220	KL7BHE	5850*
W7PUV	1575*		W6HOI	219*	KL7BJD	3204
W7PTX	1250*		K6BUS	(Conf.)	KL7ZR	2025*
W7ZIW	825*		K6JCL	(Conf.)	KL7ALZ	1755*
W7DIF	661*				KZ5VR	4158
W7GUQ	375		W7WLX	7920*	OA1K	3774
W7DXM	336		W7TGG	7905	OA4GR	924
W7FDE	124*		W7RVW	7405*		
W8UAP	1200*		W70UE	5590*	VE3AJR	(Conf.)
W8RIR	963*		W7DXM	5314*	G2YL	203*
W80TK	630*		W7DRU	4035*	G8LY	35
			W7HHH	3290	VP10LY	1991*
			W7RAX	2240*	ZL2JO	49
			K7BGP	2112		
			W7YHO	1620*		
			W7DIF	700*		
			W7DIC	650*		
			W7NIS	507		

CONTEST CALENDAR

January	3- 5	DARC WAEDC CW
January	18-19	CQ 11 Meter
January	25-26	BFRU
February	7- 9	ARRL DX Phone
February	21-23	ARRL DX CW
March	1- 2	REF Phone
March	7- 9	ARRL DX Phone
March	15-16	CQ SSB
March	21-23	ARRL DX CW
April	4- 6	DARC WAEDC Phone
April	12-13	REF CW

DARC WAEDC

Don't pass this one fellows. Activity and returns in last year's contest proved this to be one of the more popular contests. In its streamlined form, this year's version should prove even more attractive. Our only criticism is the fact that the single band competition has been eliminated. Our December issue had all the details.

CQ 11 Meter

The way 10 has been opening up of late, this one might turn up with quite a following. Scoring is very simple. One point per QSO. Multiply the total number of QSOs by the total number of states and countries. Our December issue had the necessary details. Send your logs off to CQ but to

Eleven Meter Contest
P. O. Box 584
HoHoKus, N. J.

BFRU

Just a reminder to our Canadian friends and the VP boys down Caribbean way. You fellows work 'em. We will do the listening.

ARRL

This is the Big One of the Spring DX season. January issue of QST should have all the info, you need it.

REF

Dates — Phone, 1200 GMT March 1st to 2400 GMT March 2nd.

CW, 1200 GMT April 12th to 2400 GMT April 13th.

Serial Nrs — Serial numbers will consist of the usual RS and RST report plus a progressive 3

digit number starting with 001.

Points — Points will vary according to the continental location of the French Union station. For the USA and other North and South American countries, each completed QSO on each band counts as follows:

N. & S. America —	4 Points
Europe —	4 "
Africa —	4 "
Asia —	5 "
Oceania —	10 "

Multiplier — The total points on all bands is multiplied by the total REF sections and countries of the French Union worked. This is your final score.

Calls — Example, from French stations: de F9ZZ/9 BG. In which 9 is the number of the REF section and BG (Bourgogne) is the province. FA9XX/OR. In which OR (Oran) is the REF section.

Logs — Send your logs to the Réseau des Emetteurs Francais, B.P. 42-01, Paris-RP, France, not later than 3 weeks after each part of contest.

CQ SSB

Bob Adams' SSB Column has all the dope for you Side Banders. Last year's impromptu party was a popular affair. With all the advanced notice, this year's contest should be a huge success.

Regards our recent World Wide DX Contest. Conditions for both sections were excellent. George Jacobs, W3ASK, really hit it on the nose with his forecast. Bill Leonard, one of the ops. at K2GL, with a record breaking score of around 850,000, said that he had never witnessed such fine condx during a Phone contest. And Bill has been in some real shindigs.

If anything, the condx during the CW section, were even better. WWV was batting out N7 during the whole week-end. Here at W1WY, still QRP on 28 mc with only 25 watts, I worked 37 countries on 10 and made WAC several times over. Confidentially I had a new secret weapon, a Mosley 3 Element-Tri Bander, but still you don't get involved in one of these "brawls" with only an 807 to back you up.

For you fellows who are short a ZBI confirmation or need points for your WAE, be sure to be on the air the week-end of Feb. 1st and 2nd. The ZBI gang promises to be active on all bands, 3.5 thru 28 mcs, both CW and phone.

Good fishing and 73.

Frank, W1WY



ham clinic

by CHARLES J. SCHAUERS, W6QLV

Response to Ham Clinic's technical service nearly caught us "flat-footed" to say the least! Gosh, I never saw so much mail in my life! Of the hundreds of letters and cards received, only a few remain unanswered—but they will be. In some cases, interim replies have been sent. We tried our best and want you to know we do *appreciate* your interest and confidence in our trying to help you.

Perhaps some of the answers given were a little vague, but so were many questions which were not accompanied by sufficient background information. We are *not* cryptographers!

We've offered suggestions which we hope will solve the problem submitted to us. However, we do not guarantee that our answers are 100% fool-proof! Far from it. We can make mistakes and incorrect prognostications—if we didn't we would certainly ask for an audience with the people who run the \$64,000 Question program!

But anyway, we are sincere in our desire to assist you and aim to please.

"Reminder" cards sent to a number of you should be used as stipulated. These enable us to maintain our files and furnish hard-to-get information within a reasonable length of time.

Again: remember to word your questions carefully and supply sufficient background information on your problem. Although we have files on most technical publications we do not have them all (nor does anyone else); so do not expect us to dig up an article written in 1929!

One request submitted to us on official stationery of a particular amateur radio organization, asked us to design a complete transmitter! Specific tubes were specified etc., as well as band coverage, power supply, dimensions and so on. Some research revealed that the transmitter AS REQUESTED is in a certain radio handbook. Who is pulling who's leg?

Requests as to our personal opinions on certain commercial amateur gear were answered honestly. No punches were pulled!

Three letters were received which lead us to believe that the average amateur is a great big-hearted guy interested not only in his hobby but the welfare of others. For example: "I hope you can use the following information. Will you pass it on please?"

"I have a Globe Chief 90. Firing it up on 15 meters it fell flat on its face! So I grid-dipped the 15 meter position and found that it would only get to 19 mcs. After taking off two turns, it worked like a charm! The 90 is a swell transmitter, but I guess sometimes the factory can make a small mistake!" (KN4QKI)

Now it just so happens that there were 60 queries relative to the 90 not working properly on 15. (WRL—please note)

Questions that are published will not carry the writer's name or address unless requested. We feel that we would be violating a confidence to publish a question without the writer's permission. So if you do not mind publication of your questions, please so state in your letters or cards.

Observation

The QRM on the 75 meter mobile frequencies (3975, 3980 and 3995) is fantastic! No one seems to want to listen in before transmitting!

On a recent long trip throughout the West, attempts to break into various nets were as hard as pulling the teeth from a Mississippi chicken!

This problem has been solved quite well by the "Needle Net" which operates on 3975 kcs in the San Francisco Bay Region every morning and every afternoon. Pauses are made after each transmission to accept net participants. Transmissions are limited to 30 seconds. Each station is assigned a "follow-spot" and patiently waits his turn—then he can blast loose.

When you are on mobile—any frequency, don't hog the air! Give the other fellow a chance to check in. There might be a road emergency you know!

Twists and Techniques

Although most mobileers have a red light on or near the dash to indicate when the filaments are on, or some other visible means to indicate the flow of current to the transmitter, they often forget to switch off before leaving the car. To obviate the unnecessary battery drain due to forgetfulness, hook up a small buzzer to the door switch which turns the dome light off and on. You will be aurally reminded to turn off your rig before you slam the car door!

Questions

Viking Ranger on 3.245 Mcs J. M. from Fairfield, Ala. writes: "will a Viking Ranger operate okeh on 3.245 mcs with a xtal? (This is a MARS Frequency)"

Yes Joe, it will. W6DCH has one that operates very well on the lower 3meg frequencies. If you run into low-load conditions however, a little extra output capacity will help. The oscillator seems to "take-off" easily with most crystals.

Stray RF B.M. of Salt Lake City wants to know what he can do to eliminate the hot rf he finds on his transmitter and receiver as well as his mike.

Well Bill, stray rf can be a real problem! The first thing you should check is your ground system. All too often, the average ham feels that a good ground is the nearest water pipe or a rod pounded four feet into the ground outside the shack window. A good ground is a low resistance ground connected to equipment with good solid copper wire or braid of the proper size. Using bell wire for a ground connection is asking for trouble. Commercial stations pay about as much attention to adequate grounding as they do their antennae systems.

If space is available, about 12 pieces of number 12 copper wire 25 to 60 feet long buried about a foot and a half in moist earth, arranged in the form of a wagon wheel with central connection to the "hub" make an ideal ground. Certainly its a lot of work but worth it.

Now how about proper antenna impedance matching? Is the rf getting into the antenna or is it being dissipated in your final tank (and inadequate ground system)? Standing waves "throw" rf all over!

Have you checked the possibility of having a "floating" power system? This is an important point often overlooked by the average operator. With a three wire 220 volt system coming into the house which is split for distributed load, there is the possibility that the entrance ground system is very poor. A voltage between the ground you installed and the entrance ground can exist when you flip on your transmitter.

How long is your mike cord? Your ground connecting wire? Rf has the peculiar property of wiggling its way into the derndest places! Rf chokes in series with your mike input connections and those leading to your ground often help.

Imperfect coaxial grounding can also contribute its share to stray rf.

Receiver Conversions. Many requests have been received to supply conversion information on various types of receivers such as the old SX 25, SX 42, HQ 120, SX28, NC240D, 183 and many others. Those having these receivers seem to be of the general opinion that it is a simple matter to pick out a few low noise miniature tubes, change a few resistors and condensers and presto! a new receiver. To be brief, there are some changes which will improve sensitivity by changing tubes, but selectivity is another matter. For one thing, in addition to condenser and resistor aging there is the matter of old type single and double tuned IF transformers to worry about. Frequency stability is another problem (with parts that change value due to changing temperature).

No doubt, a good receiver engineer could re-vamp an old receiver and make it perform about as well as an ultra-modern set, but he would need a lot of time, patience and money.

The few changes (such as those described in December 1957 CQ) which have been found effective and are easy to make are not frowned on. However, not every amateur has the proper equipment for realignment of his receiver, after he has made the necessary changes.

Vertical Antenna. S.R., New York City wants to know what the best way is to feed a vertical antenna a quarter wavelength long with any transmission line.

The easiest way Steve is to series tune the vertical with a coil and condenser; the coil being link coupled to the transmission line. That is, the coil-condenser combination resonates at the transmission frequency and is connected between the lower end of the vertical and ground. Then a link is wound around the main antenna coil; it is connected to any transmission line. The vertical is cut to frequency. *Regulator Tubes.* "What is the minimum current requirements for stable operation of gaseous regulator tubes such as the VR150 etc.?" E.L. writes from San Diego.

Between 5 and 10 milliamperes. Starting voltage is generally about 25-30 percent higher than the operating voltage. The usual load current runs between 30 to 35 milliamperes for available tubes used in ham gear.

Sweep Generator. F.K. writes from East Orange, N. J. "what tube would you suggest be considered for building a linear sweep generator for an oscilloscope I'm making?"

Try the 884. It's a gas triode and works very well. Using this tube you can control sweep frequency by switching fixed condensers in or out of its plate circuit. Fine frequency adjustment can be accomplished with a high resistance potentiometer.

50 Mc Antenna. "Would you please give me the dimensions and spacing for a four element 50 mc beam?" asks T.R. Jacksonville.

[Continued on page 94]

Ham Clinic [from page 93]

Make the first director about 104"; second director 106"; folded dipole about 111" and the reflector about 117". Feed the antenna with 300 ohm ribbon etc.

Space the first and second directors about 58 inches; second director to radiator about 47 inches; and radiator to reflector about 47 inches. Space the 1" tube used as radiator about 1¾ inches from the driven ¼" tubing (which is split exactly in the middle to take the 300 ohm line). Good dx!

Joining MARS. F.C. Chicago wants to know how he goes about joining the Military Affiliate Radio System in his area.

In your case Frank, write to the MARS Director, Hqrs. 5th Army, Chicago, Illinois. For those of you interested in either Air Force or Army MARS write to the MARS Director of the headquarters nearest you.

Question of the Month

Doc Lovestedt, KØEVW asks: "am trying to work 6 meters from my Volkswagon but the ignition noise at moderate and higher speeds makes it almost impractical. Any suggestions?"

An article has been prepared for the Editor's consideration Doc, and has been written with a number of foreign cars in mind. In the meantime I am forwarding you and 11 others personal letters giving you the run-down in brief on what I did (successfully) to eliminate ignition and generator noise. It can be and is being done, but it's work!

Book Review

After buying a copy of **COMMAND SETS** for \$1.50 I found that I had gotten more than I had bargained for. Replete with good solid information on the popular command transmitter and receivers manufactured in wholesale lots for the Air Force and Navy during the war, this 136 page treatise enables those who do not have much money to go on the air and give a good account of themselves.

Written in easy-to-understand language, it covers conversions thoroughly and enables the Novice as well as the Extra-Class licensee to put together an effective station.

Command sets are still widely available and at prices most can afford to pay. So whether or not you contemplate going mobile or fixed with command equipment, you can't go wrong if you buy the book. It is really worth the buck fifty.

Thirty

Trying to choose questions for this department which would be of general interest is a task not to be sneezed at. What is interesting to one may not be to another. A lot of midnight oil has been expended answering questions from far and near. We enjoy serving you the CQ reader, and hope that you will bear with us if we are a little tardy; because we really have to "dig" on some questions—and this takes time.

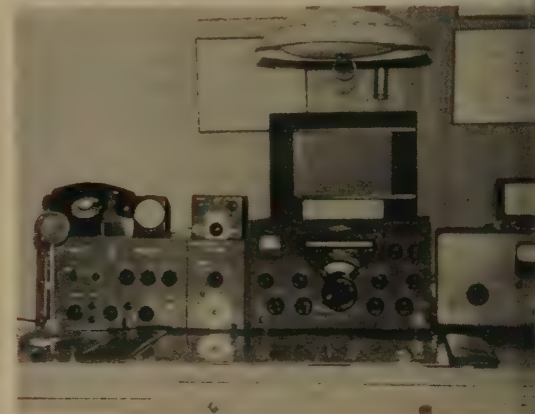
73, Chuck, W6QLV

SB [from page 63]

GMT around 21,431 Kc.

W5VGE/4, Luke lost his tower in a recent storm but put it back up in the height of a second storm in the area. He accused me of "losing interest in ham radio" because I did not put my new tri-bander up in the same storm. By the way the new TA-33 Mosley is sure FB on all the three bands and I have brought my country count to 90 by working HC2AGI, OQ5GU, VS6AZ, GD3GMH, OA4AS, HH2JT, HZ1AB and VP2AZ.

Radio lost one of its finest in the passing this month of Lou Springer, W4NMW in Florida. We will all miss you Lou.



W2CMM, Bing

According to my latest records there are or have been 117 countries with SB activity. These are as follows: AP2, BV1, CO5, CN8, CP5, CX5, DL4, EA2, EA9, F, FS7, G, GI3, GM3, GD3, GW3, HB9, HH2, HP1, HR2, HZ1, I, KA, KB6, KC4, KG4, KH6, KL7, KM6, KG6, KAØ, KP4, KR6, KS6, KV4, KX6, KZ5, KG1, LA8, OA4, OD5, OE13, OH1, ON4, OZ3, PAØ, PJ2, PY2, SM6, SVØ, TF2, TG9, TL2, VE, VK, VP7, VP9, VQ4, VR2, VS6, W, XE, YU1, YV5, ZD4, ZE6, ZL, ZS, ZS3, 4X4, 5A2, VP2, OHØ, LU, FQ8, EL4, ZK1, YS3, ZB1, VP2, Leeward, VK5, CE2, HB9/FL, DU7, HS1, VS4, CR9, 3A2, UA1, KT1, TA2, YN4, EAØ, VU2, ET3, VQ5, ZD1, VQ3, MP4, YA1, YI2, YO3, OQ5, ZP5, VS5, KW6, VS2, VS1, VR4, SP7HX, VR2, VR6, EI4. And the list grows daily.

Don't forget the SB World Wide DX Contest from 1800 GMT March 15 until 1800 GMT on March 16, 1958. It should be very interesting. CN8MM is already preparing to win again.

This will be the last listing of Countries Worked without verification of the totals submitted. Unless your totals have been submitted and have been duly verified by another amateur from the QSLs received, then your call will not be listed. Remember the closing date is the 18th of each month.

73, Bob, W3SW.

New Amateur Equipment



Antenna Rotor

Bill Ashby, K2TKN (ex-W0ETJ) had quite a hand in the production of this new rotor by Cornell-Dubilier Electric. The Model HAM Rotor is designed to be easy to install, rotate just about anything you can afford to put up, last indefinitely, lock firmly when not being rotated, and give an extra accurate indication of the beam direction. They thought of almost everything. There are limit switches built in to stop it at each end of the rotation. A separate transformer is used for direction indicating to assure accuracy.

Rotating the amateur antenna has presented quite a problem since the choice of rotating mechanisms available were either very expensive, too light duty, or required considerable conversion. The fellow who wanted to rotate any real weight had to face serious pocketbook repercussions.



Looking inside we find stainless steel motor gears plus ball bearings all over the place. The shell is die-cast aluminum alloy. The brake is solenoid operated to eliminate drift. The unit is built for ruggedness and long life. The indicating meter is calibrated every 3°!

Price, complete, is only \$99.50!

For more information circle 7 on page 126.



"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

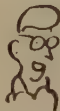
ALL-BAND VERTICAL ANTENNAS

GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in

less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.

Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

I USE MY GOTHAM ALL-BAND VERTICAL ON 6, 10, 15 AND 20



ME TOO, TOM-AND LAST NIGHT I SWITCHED TO 40, 80, AND NO. WORKED SOME REAL DX!



QUALITY MATERIAL

Brand new mill stock aluminum alloy tubing with Aluminite finish for protection against corrosion. Loading coils made by Barker & Williamson.

ALL-BAND OPERATION

Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

EASY ASSEMBLY

Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

SIMPLE INSTALLATION

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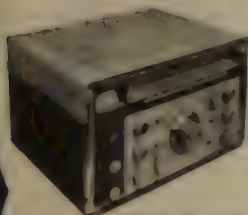
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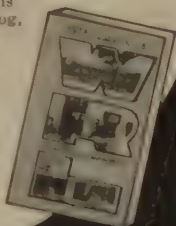
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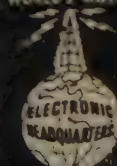
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in most cases burn the leads away inside the condenser terminals, due to the very high instantaneous current which they can supply. With the plate transformer primary switch off and the exciter running, a few words into the microphone will dissipate the stored energy to a major degree. If cut off bias is used on the final, you may have a small charge remaining; but this may be disposed of in any of the normal ways; shorting, screw drivers, etc.

A Watt Meter in the primary of the plate transformer will show a steady drain when the final is in operation. The voice burst current you see on the final milliammeter should not show on the primary side of the plate transformer. If your plate power kicks are appearing in the primary side of the plate transformer, you are overloading the supply. As long as the oscilloscope pattern shows your modulation is clean, you may load right up to the point where the primary just starts to show power rise with modulation. One of the nice features of this system is with a 2 KW peak power final you may have the primary connected to 110 a-c single phase line and not have lights blinking or other disturbances in your home.

For AM operation, this type of supply is utterly worthless because the filter bank cannot carry the steady high load and all the load does is to move back to the transformer, which is not large enough to carry the steady state condition of the AM requirements.

I promised the c-w men some data that should be of interest. In running tests to see just what could be expected from a supply of this type on cw, it was found when loading the final to the same conditions as were used on Single Side Band, the envelope shape of the dots and dashes was very interesting. It reminded me of the good old days when bleeders cost too much and we squeezed every ounce from the final power supply. Power output is a function of sending speed and length of the on time of the dots and dashes. This at first gives a very dim picture, however, if you drop your plate current back a bit and use a medium keying speed, the output power and keying wave form will be quite usable. One thing that will fascinate the DX boys is the peak power on the start of each dot or dash, which gives the signal a very piercing sound on the air.

A supply of this type has been used for months on a 14 mc SSB rig using 1000 T's with excellent results. Reports from stations with Oscilloscope equipment give the signal a clean bill of health, no flattening and very sharp spikes on peaks.

The possibilities of a power supply of this type is fully realized by the writer. Light weight, small size and low cost, coupled with the kick of a mule when used properly makes a very interesting package.

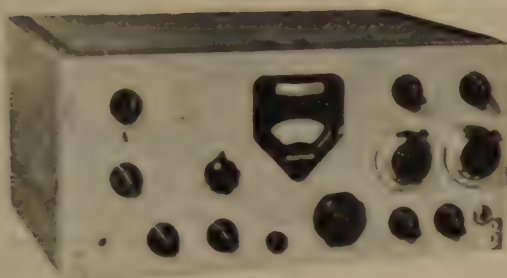
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twenty years ago. But then came the Novice license and the 5 wpm code requirement. This meant that instead of having to sit and drool over the ham bands you could get busy on the air with a low power rig and actually work 'em. Where did this leave the SWL? Time was when the mail brought almost as many SWL cards as QSL cards to the active phone ham. I haven't gotten more than a couple in the last year. A few months back I jabbed the SWL's to see what would happen . . . the letter printed in the October CQ was rather typical . . . mostly SW broadcast listeners, not ham SWL's. But Tima's letter is potent, maybe he has a good idea there. I don't feel that I should turn him down without taking a sounding of the readers on such an important matter. Thus I am printing here his letter for you to mull over. Please let me know if you would be interested in reading such a column every month or every other month, or let me know if you wouldn't. How many ham SWL's do we have, licensed or unlicensed? On a world-wide basis Tima has found that interest is high . . . but how about in this country . . . and you fellows are the ones who are paying the bills, so you are the ones to say what goes . . . W2NSD (Well, what say fellows, do we want to hear more from Tima?)

Addresses of hams who have answered SWL Reports . . .

- CP3CB—Ing. G. Thofehrn, Casilla 200, Oruro, Bolivia
- CR4AG—Jose Pedro Afonso, Box 55, S. Vicente, Cabo Verde
- CR5AC—Anibal Barbosa Vicente, Box 38, Bissau, Guine, Africa Occidental Portuguesa
- CR7AQ — Anibal A. Martins, Caixa Postal 821, Laureço Marques, Moçambique, Africa Occidental Portuguesa
- CT3AN—Jose L. De Brito Gomes, Rua Da Carreira, 197, Funchal, Ilha de Madera
- DU1AL—Alejandro Legarda, 181 San Rafael, Manila, Philippines
- EL9A—Augie H. Le Monze, PAA, Roberts Field, Liberia, West Africa
- EP3SS — QSL through DARC, Munich 27, POB 99
- FD8AA—R. F. de Tugny, Box 183, 3 Avenue A. Bissagné, Lomé, Togo, E. Africa
- FF8DA—Dobak Albert, P.B. 1085, Dakar, Sénégal, Afrique Occidentale Franc.
- HP1GD—Jorge E. Dawson, Apartado 1616, Panama, R. de Panama.
- HZITA—H.R.H. Prince Talal al Saud, The Royal Palace, Ryiadh, Saudi Arabia
- IS1EHM—Maria Marras Comida, Virle Regina Elena N. 17, Cagliari, Sardinia
- MI3LV—Luciano Valeriani, P.O.B. 374, Asmara, Eritrea, East Africa.
- MP4KAC—Wm. N. Burgess, Box 54, Kuwait, Persian Gulf

- OA4EK—Adolfo Arens, Pasaje Velarde 170, Lima Peru
- OQ5HL—Leopold Hansenne c/o Telecommunications, P.B. 3142, Leopoldville, Belgian Congo
- VK5HI—John Clifton, Adelaide, South Australia
- VP3YG—Desmond E. Yong, 22 Sussex Street, Georgetown, British Guiana
- VP4LZ — PAA Flight Radio Officers, PAA Guest House, Piarco, Trinidad
- VP900 QSL via VP9D—James A. Mann, c/o Cable & Wireless, St. George, Bermuda Is.
- VQ2JN—John Nortje, P.O. Box 7, Livingstone, Northern Rhodesia.
- VS9AS — George H. Schuler, C/O A.M. D.G.W. Mess, Royal Air Force Station, Khormaksar, Aden
- VS7FG—Freddy Gomes, "The Tent", Mt. Lavinia, Ceylon
- FU2JU—QSL via P.O. Box 6666, Bombay 20, India
- YI3ETQ (G3ETQ) — Gerald B. Whitfield, Basrah, Iraq
- YN4CB—Christian Brothers, Colegio San Jose, Bluefields, Nicaragua
- CD6DU—QSL via R.S.G.B.
- ZE4JC—A. P. Dale, P.O. Box 88, Causeway, Salisbury, Southern Rhodesia
- ZKIBC—R. Hanley, Aeradio Station, Nikao Airfield, Rarotonga, Cook Islands.
- ZP4AF — Dr. Frederico Donna, Convencion 562, Asuncion, Paraguay.
- ZL2GS O H.E.H. Green, Clifford Road, Johnsonville, New Zealand
- ZS1H—J. J. Van Ravesteyn, "Twyford Lodge", Sandown Road, Rondebosch, C. P. South Africa

Addresses of SWLs wanting to exchange cards between each other.

- B.R.S. 20206, Roy Smith, 'Quarry Road, Tupsley, Hereford, England
- G-SWL, Ron D. Young, 3, Bell Hill, Danbury, Chelmsford, Essex, England
- HL-1002, Dong in Cho, C/O K.A.R.L. P. O. Box 162, Seoul, Korea
- SWL—JA2, Yasutsugu Miura, Katamachi, Kaitaracho, Hoigun, Aichi, Japan
- SM1-SWL, Arne W. Arscans, Box 18, Stjärnarve, Gotland, Sweden
- W8-6913, Joe P. Morris, 10512 Parkview Ave., Cleveland 7, Ohio, U.S.A.
- W7-SWL, Miss Betty Pearl Elder, 1202 Broadway, Bremerton, Washington, U.S.A.
- SWL-VE4, John W. Shinn, Box 20, Bowsman River, Manitoba, Canada
- VE6-SWL, Louis Thoreson, P. O. Box 115, Ponoka, Alberta, Canada
- ZC4-5218, Arthur Miller, via ISWL
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[Continued on page 104]

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Receiver, transmitter and antenna theory and construction for the Novice and Technician. Terrific book. \$2.85
- 24 **Better Shortwave Reception by W6SAI.**
Fine handbook for SWL'ing, long needed \$2.85
permission granted to use separate paper if you want

OK fellas, send me postpaid the items circled, and get a move on.

1 2 3 4 5 6 7 8 9 10 11 12
13 16 17 20 21 22 23 24

Name (Handle) Call

Address (QTH)

City Zone State

Cash, check or money order enclosed, of course.
N.Y.C.'ers add 3% for Wagner

Radio Bookshop

1379 East 15th St., Brooklyn 30, N. Y.
Patronize Ham Industry, bub.

Letter [from page 100]

ZL-SWL, Eric McIntosh, 240 George Str., Invercargill, New Zealand

ZS-SWL, Jean Beaunoir, P. O. Box 23, Jacobsburg, Natal, U. of South Africa

Letters

Philippines. Pedro R. Buhay Jr., DU9-SWL, 15 Machambus St., Cagayan de Oro City

"I am an SWL, though not a good one, I should say. I guess I am the only SWL in DU-land. I've written to several amateurs here and even to the secretary of the PARA, asking them if they have heard from other SWLs and I got a negative reply. I have been tuning the SW bands for more than a year now but have not sent any reports to foreign hams yet, though I've logged a number of them. Until now I still have not a QSL card of my own and I don't know when I can have one. I can't seem to make a design suitable enough to send the hams with a report of their QSO.

"I'm using a 3-band 5-tube RCA receiver and a long wire antenna about 100 feet above the ground and about 150 feet in length. I still need more information in SWLing . . . 73's and best in DX, Pedro."

How about some of you SWL boys getting in touch with Pedro and send him some information and samples of SWL cards?

Cleveland, Ohio, U.S.A., Joe P. Morris, W86913, 10512 Parkview Ave:

"Although I send many reports to stations I hear on the amateur frequencies, I also send my cards to other listeners and in return they send me one of theirs. I now have listener cards from 17 countries . . .

"The set-up here is an 11 tube National NC-125, with an RME DB-23 preselector in front of it. The antenna is a folded dipole cut for 20 m., N/S, at a height of 30 feet. I have logged 147 countries and 34 zones on the amateur bands since I began DXing in 1953. I have received confirmations from 60.

"I have enclosed a list of other listeners who would be glad to 'swap' cards. Also would be interested to know if you can supply QRA's of listeners in such countries as U, YO, LZ, HA, SP, etc. Very best 73's es DX, Joe."

Thanks for the fine information, Joe. There are a lot of SWLs in the countries you ask for, but they do QSL only via the bureau. No QRAs are printed on their cards.

Canada. Art Ferguson, VE3HP, Ontario Hydro, 280 York St., London, Canada

"Saw reference in CQ . . . always interested in reports and always QSL."

Canada. John W. Shinn, SWL-VE4, Box 20, Bowsman River, Manitoba

"Would like to swap SWL cards. I now have 30 countries SWL'd. The set-up is a trio 9 tube receiver made in Japan and a 100 ft. long, 62 ft. high antenna."

Well, that's it for the beginning. Any comments, ideas and suggestions will be appreciated. So, SWL boys and gals throughout the world, let's hear from you soon.

73s, Tima

FP8 [from page 29]

17 miles on our way. Here he assured us there would be taxis about 2:00 in the afternoon.

7 hours we sat. What if the taxis came in filled to capacity?

One of the three taxis had room for two more passengers.

The trip to Fortune was something to remember. Such a road. But the scenery in this part of Newfoundland was breathtaking. While our frames received a thorough bouncing, our spirits got quite a lift.

As we rounded the southern tip of the peninsula we could see the lights on the island of St. Pierre, 17 miles out. At last we felt we really might reach our goal. The rain had

[Continued on page 106]

HARRISON HAS IT!

THE PERFECT RECEIVER FOR SPUTNIKS... OR ANY PRECISE FREQUENCY from 540 KC THRU 30.5 MC



COLLINS 51J-4

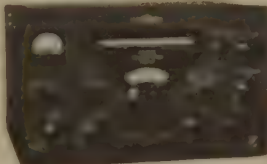
The finest general coverage commercial receiver, with frequency-standard accuracy. Ideal for Laboratories, Communications, and the discriminating Short Wave Listener!

HARRISON IS HQ FOR *Collins* EQUIPMENT

KWM-1 Combines PTO 175 watt SSB/CW transmitter and extremely accurate and sensitive receiver in a compact case only 6 1/2" x 14" x 10"! Designed for convenient mobile and fixed station. Powers for 11 VDC, 18 VDC and 115 VAC. Available frequency ranges 14 thru 30 MC. For Amateur and commercial service.

— ASK FOR LITERATURE —

75A-4 The Ham band receiver that is the standard of comparison! Ask the man who has one — then you will want to order yours! From Harrison of course if you want the best deal, with the easiest terms.



— EASY TERMS —



KWS-1 Clear, efficient SSB, AM and CW signals with plenty "talk-power" that pushes thru for Amateurs who few they deserve the pleasure of having the best. It's a good investment — you'll be surprised at how little it costs per year to enjoy "The Cardinal of Hamilton". Get yours today. We carry them in stock!

**COME ON IN WITH
YOUR PRESENT GEAR...
FOR A BETTER TRADE!
• FREE PARKING •**

PRE-ALTERATION CLEARANCE SALE We need more room — to enlarge our HARRISON TRADE-IN CENTER

Come early! Come often!

See some terrific reductions on

- Trade-Ins and Demonstrators
- Close-Outs of Equipment, Parts, etc.
- Daily "Surprise Specials"

- **DIRECT FREQUENCY READING**
Long slide-rule dial exposes a single linear scale for each of the 30 one-megacycle bands. Tuning dial reads direct to exact one KC.
- **HIGH STABILITY**
Excellent for SSB, FSK, Diversity, fixed frequency, etc. reception.
- **PERMEABILITY TUNING**
- **EXCEPTIONAL SENSITIVITY, SIGNAL, NOISE RATIO**
- **STEEP SKIRT SELECTIVITY**
Mechanical and crystal IF filters give ideal rectangular pass-band.
- **CRYSTAL CONTROLLED DUAL CONVERSION**
- **CLIMATIZED**
—20° C to +50° C, up to 95% relative humidity.
- 115 230 Volt, 45 to 70 cycle. 85 Watts.

PLUS a host of other desirable features — internal break-in relay, crystal calibrator-checker, improved noise limiter, RF input Af output level meter, AGC, panel selector for 3 mechanical filters, standard 10 1/2" rack panel, etc.

Collins 51J-4 Receiver, complete with tubes, dust cover and one Mechanical Filter. Mounted in 21" x 12 1/4" x 13" cabinet.

\$1,208.00

Plug-in Mechanical Filters: 1.4 KC (for CW), 3.1 KC (Clipped voice), 6 KC (Full audio range)

Each—\$80.00

Matching Loud Speaker \$30.00

**IN STOCK, IMMEDIATE DELIVERY
EXPORT INQUIRIES INVITED**

HARRISON

Ham Headquarters Since 1925

**225 GREENWICH STREET
NEW YORK 7, N.Y.**

**PHONE ORDERS - BARCLAY 7-7777
LONG ISLAND - 144-24 Hillside Ave., Jamaica**

For further information, check number 27 on page 126



LA-400-B LINEAR AMPLIFIER... simplified multi-band operation on 75 thru 10 meters. Improved TVI suppression. New metering circuit reads RF voltage input, plate current and RF amps output. Low Z, untuned, 400-watt P.E.P. input with more stability, better linearity, only 20 watts drive. Pi-net output. Designed around four Modified 1625 Tetrodes. Especially effective for SSB; also delivers high quality signal on AM, PM, CW. Ideal for portable use. Complete with power supply and tubes.

**SATISFACTION
GUARANTEED**

PRICE \$229.50
ALSO AVAILABLE
Modified 1625 Tetrodes \$3.75 each.

P & H ELECTRONICS, INC.

424 Columbia, Lafayette, Ind.

For further information, check number 37 on page 126.

the Collins 75A-4



Designed expressly for Operation
on the 7 HF Amateur bands

This outstanding SSB receiver features AVC on SSB and CW, separate detectors for AM and SSB, passband tuning, rejection tuning, Gear Reduction Tuning Knob, superior selectivity and many other time-proven Collins features. Net Price ---\$695.00

Complete line of Collins equipment
and accessories.

GENESEE RADIO & PARTS CO., INC.

2550 Delaware Ave.
DE 9661

144 Genesee St.
CL 1970

Buffalo, N. Y.

NIAGARA RADIO & PARTS CO.

1412 Main St., Niagara Falls, N. Y.

For further information, check number 38 on page 126.

106 • CQ • February, 1958

FP8 [from page 104]

stopped and it was wonderfully clear, but cold. Really cold. Good thing we brought heavy winter woolens and jackets.

From Fortune a little boat called the *Spencer* II sails at 1:00 p.m. every Tuesday, Thursday and Saturday to St. Pierre. Arriving Tuesday evening we resumed our former attitude of gloom, assuming we'd have to spend a day here, cooling our heels and toes.

Fortunately, our bad luck was running out. The same storm that inundated us throughout our journey, down here had whipped the Atlantic into a frenzy that persuaded the *Spencer* to lay over 'til Wednesday. Gratefully we loaded our luggage onto her and retired to a local guest home. That night I dreamed of hamming on St. Pierre with call letter FP8AS (which, it turned out next day, was the call they had reserved for me).

Next morning at 7 we put out of the harbor on the last leg of our devious route to St. Pierre. The little, low-horsepowered *Spencer* took 3 hours, hoisting two enormous sails when we cleared the harbor, to take advantage of the wind, which true to our new turn of luck, was with us this morning.

The St. Pierre coast is rugged but beautiful. Cliffs rise 400 feet straight up from the sea. Thru the harbor entrance you can see the little town of St. Pierre spread over a gently sloping hillside, in the shadow of more rugged hills.

Gus Roblot, FP8AP, was at the dock to meet us, and helped us thru Customs. A finer gentleman we could not have hoped to meet. Gus has lived on the island all his life. Thanks to Gus we felt at home right away. Besides "big" hospitality, Gus helped us in little ways, too. Like when we were all set to go with over a thousand dollars' worth of ham gear and no place to plug it in—and no knowledge of French. How do you ask for a simple, ten-cent female socket in French? But Gus fixed us up.

M. Louis Hourtoné, *Chief d'Electric*, in charge of issuing licenses, assigned us the calls FP8AR and FP8AS. Then the job of setting ourselves up in Room 8 of the Hotel Robert. Color TV? No, you can't tell them that. Well, they don't understand English anyway. Gus will explain.

Then we hoisted a 136-foot Marconi. 30 feet above ground at the hotel end, about 8 feet at the other end. And another antenna, an all-band trap affair.

Elmac AF-67, running 90 watts CW, 65 watts AM. 50 watts legal maximum on 160, 80 & 40. For SSB, an HT-30 lent by Hallcrafters. An NC-300 receiver.

Signing FP8AS once after a ten-second tune up initiated the confusion we travelled all this distance to enjoy. An XYL, Audrey, W3GEN, was right there calling us. With no earphones on yet, the logs on the bed, pencils nowhere

[Continued on page 108]

SAVE!...BARGAINS GALORE!...SAVE!

NEW LOW PRICES! — EFFECTIVE FEBRUARY 1st

COMMAND TRANSMITTERS & RECEIVERS

ARC-5 and SCR274 as
available
BC 455

XLNT \$5.95

**Depot
Repacks \$7.95**

Receivers, w/o dynamotors



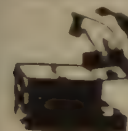
R-25 Marine, 1-5-5 MC, new \$14.95
R-26 or BC-455, 5-5 MC, used \$6.95, Depot Repacks 7.95
R-27 or BC-455, 5-5 MC, used \$5.95, Depot Repacks 7.95
R-28, 100-150 MC, New 13.95
R-4/ARC-2, 234-254 MC, as is w/o tubes \$2.95, 4.95
Receivers Operator Knobs ea. .89

Transmitters, w/o modulator or dynamotor

T-18 Marine, 1-1-8 Mc. as is, w/tubes, 3.95, used 4.95, 7.95
T-19, 3-1 Mc. as is, w/tubes 6.95, used 7.95, new 8.95
T-20 or BC-457, 5-5 Mc. as is, w/tubes 2.95, used 3.95, 4.95
T-21 or BC-458, 5-5 Mc. as is, w/tubes 2.95, used 3.95, 4.95
T-22 or BC-459, 7-9 Mc. as is, w/tubes 3.95, used 5.95, 7.95
T-23, 10-14 Mc. amplifier used 13.95, XLNT 14.95
Special—1 R-28 Rec. & 1 T-23 mixer both 25.95

Misc. Command Equipment as available

Receiver dynamotors 28V. used \$ 1.00
BC-456 SC Mod. w/tubes new 4.95, used 3.95
MO-7 ARC-5 P1 Mod. w/tubes less dyn. XLNT 8.95
28 v dynamotors for above unit 3.00
C38 ARC-5 Converter New 1.49
C30 ARC-5 Converter New 4.50
Radio Condenser Ind. 1-22A New 8.95
12V Relay DIST New 2.49
New 12V Transformer 1.00
Plugs for rear of receiver



110 VAC power supply for ARC-5 &
274N Receivers kit 8.95, Wired & tested 12.95
Receiver Conversion kit: cont. auto-
matic, BFO 66, 25 K Pot. phone
jack and knob, with instructions 1.95
1625 Tubes, for trans & mod 50¢ 3/1.00

POWER DRIVEN ANTENNA REEL

1/4 HP G.E. Motor—12-24 V. Removable 6" Steel Cam worm
gears, bevel gear, Holenoid clutch. In gear only when current
on. Operates clockwise or counter clockwise. Ideal for power
line, opening or closing doors, auxiliary power take-off. Can be
used as hauling machine or for down of other uses.
Weight 6 Lbs. New \$4.95

Popular Dynamotor Specials

DM-34 Rev. Dyna. 12 V In 220 Gr 80 ma out, new 4.95
DM-42, 12 V In out 1000 and 500, as at 215 Ma. used 12.95
BD-83, 14V In, out (150 Ma. used) 8.95
Wincharger Dyna. 12 v In 440 Gr 200 MA Out, new 12.05
BD-69 Rev. Dyna. 14 v In, 220 at 80 MA out, new 9.95
PE-73, 24 v In 1000 at 250 Ma out New 8.95, used 8.95

BC-357 Radio Beacon Receiver

60-80 Mc. radio controlled receiver. Contains 10,000 ohm plate
relay. Power requirements are 24 V. AC Gr 5 Amps and 200
V. DC Gr 20 Ma. Swell for Garage Door Opener, Receiver,
and other remote control installations. \$4.95
Brand New \$ 1.49
12 V Heavy Duty Solenoid, New .75 ea.
G6 Tubes, New \$1.49 ea. 2 for \$2.75
845 Tubes, New .89
6V6GT Tubes, New .89
BC-654 Transceiver: 3800 to 5800 KC Used \$34.95

Cathode Ray Tubes

5MP4 or 5CPI New 1.98
7BP7 New 2.98

2.00 Minimum Order. All prices Subject to Change without Notice. Canada & Mexico minimum 10.00. Cash
with Order. Sorry, no COD. California Orders Include 4% tax. Prices FOB Los Angeles.

SAM'S SURPLUS, 1306 Bond St., Los Angeles 15, California

For further information, check number 28 on page 126.

WESTON—SANGAMO

METERS. ALL NEW 2" SQUARE

0-2 Ma 0-300 Ma
0-5 Ma 0-500 Ma \$3.29 ea.
0-10 Ma 0-20 VDC
0-50 Ma 0-40 VDC
0-100 Ma 0-300 VDC
3 for \$9.00



Heavy Duty Collins chokes 4 Hy-300 Ma can take 500 Ma peaks.
Hantam 1 watt, HC-746 plug-in transmitter tuning unit from
WALKIE TALKIE, 140 mmfd 41M type variable cond. plus
assorted parts including chassis. Builds into low power trans-
mitter (See CQ March '54) New, \$12.20

OIL CONDENSERS

2 mfd 5000 vdc new \$5.95 8 mfd 600 vdc new 1.49
2 mfd 1000 vdc new 1.95 4 mfd 600 vdc new 3 for 1.00
10 mfd 600 vdc new 1.49 2 mfd 600 vdc new 3 for .50
Mobile Microphones, newly assembled, W.E. D173015 similar
to the TC-128, push-to-talk switch, 3 cond. \$3.95
5' curl. cord, new

Chest Mike T-26 w/F1 Button, New \$1.49
F-1 Carbon Mike Element .50¢
RT-46A/TPX-1 IFF Trans-receiver 157-167MC. Complete with
Tubes, used, XLNT. Makes nice 2 Meter Rig \$12.95
BC-655 Ideal for Remote Control Boats, Planes, etc. Range 17.5
to 160 mc. New \$19.95
Brand New Headphones, HN-23, 2000 ohms, \$3.95, HN-33,
600 ohms, complete with brand new rubber
cushions \$4.95

New small cushions, pr. .49
Used chamels cushions, pr. .49
New lg rubber cushions, pr. .29



Brand new Impedance matching transformer, plug
In, 2000 ohms to 600 ohms, takes std
plug boxed 69¢ each, 3 for \$1.95
CD-307A cords, has JK-26 on one end
for phones, std plug other end \$.97

Stewart Warner Ammeter, 60-0-60 Amps, brand new,
95¢, 6 for 5.00
Phone-CW Filters, 1020 cycles, new, FL-5, 1.89 FL-8
with switch 2.95
GP-7 transmitter with all tubes less 803 tubes with 80
meter coil unit only 13.95
less tubes and coil unit 7.95
TU-7, 4-5-6 MC; TU-8, 6-2-7 MC; TU-9, 7-7-10 MC;
TU-10, 10-12.5 MC; TU-26, 200500 Kc, choice, used,
for BC-375 transmitter, each 2.29
T-30 Throat Mikes, used, 5 for 1.00
3' West Sections, MN-49 thru 52, 50¢ each, 53 and above,
75¢ each. Special 1 each MN-49 thru 54, makes 18'
vertical 2.95

MN-26C direction finding Equipment

MN-26C Receiver w. dyna. 14.95
MN-20E Loop 4.95
MN-52H Az Cent Box 2.95
All above new, special, 1 each for
Antenna Insulators, Bendix MT-4N,
wired end caps, new 15¢ ea., 10 for 1.25
Control Box w/5 Ma B meter, special 1.98



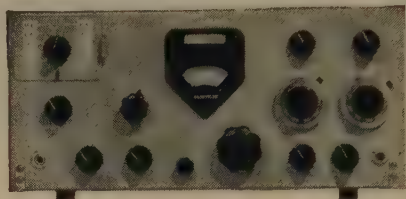
SCR-522, etc. condition. Contains Receiver, Transmitter,
Modulator, tubes, tunes 100 150 MC, covers 2 to w/o
modulator 29.50
322 Control Box—HC-602 New 4.50
New transmitters, GF-11 for 12 volts, or GF-12 for 4
volts, with tubes and built in modulator—less
unit, GF-11 \$8.95, GF-12 8.95
BC-223 Xmitter New With all Tuning Units 29.50
Used W/One Tuning Unit 18.95
Right Angle Cone Connectors. Type M-359 and M-359A
29

TG34 or TG10, 1 Hour Code Tables

No. 10, No. 13 New, ea. 1.25

the Collins KWM-1

SSB Mobile Transceiver



FIRST Mobile SSB Transceiver — 175 watts PEP input, 14-30 mc. Excellent frequency stability. Use as mobile or fixed station without modification. Break-in CW using VOX circuits, side tone for monitoring CW. Ten 100 kc. bands available anywhere in the 14-30 mc range. 6¼" H x 14" W x 10" D. Net price\$820.00

Write or see us about trade-ins,
time payment terms.

EVANS RADIO

P. O. Box 312

Concord, New Hampshire

For further information, check number 39 on page 126.

A HAM'S DREAM COME TRUE!

THREE BEAMS FOR PRICE OF ONE

TRI-BAND Cubical Quad

10 METER — 15 METER — 20 METER

- ★ Pre-tuned coils—no tuning required.
- ★ Very light weight. TV rotator will handle.
- ★ Minimum wind resistance.
- ★ 8 Db gain on 20.
- ★ 10 Db gain on 10 and 15.
- ★ 20 Db Minimum F/B ratio.
- ★ Aluminum boom and end spiders for perfect alignment.

Hams all over the world voice their praise
of The SKYLANE CUBICAL QUAD

WRITE FOR FREE BOOKLET

Only

\$54.95 SKYLANE PRODUCTS

F.o.b.

5320 Nebraska, Tampa 3, Fla.

For further information, check number 40 on page 126.

108 • CQ • February, 1958

FP8 [from page 106]

to be found, the avalanche began. What a thrill! My flesh crawls when I just think about it. That first day! Wow.

The second day heavy aurora blacked out the bands for several hours. It was another day and a half before conditions returned even to "fair."

Really only two of our days were "excellent," but regardless of conditions we wound up with 1500 QSO's—800 on CW and 700 on 'phone. And so-o-o nice. All we'd need to do was touch the key, or breathe into the mike (not forgetting to mention our magic call letters) and all hell broke loose—a beautiful confused, snarling mass of signals—all calling us! (Sigh!) What fond memories!

Our idyllic St. Pierre DX-fest lasted September 11th thru 18th. In mid-afternoon the 18th we had to QRT to start repacking. We couldn't chance missing the *Miquelon* on its return to North Sydney, Nova Scotia.

Last chapter, abridged: We made it home. Puff, puff! Even reasonably on time. Inventory. Spent, each, \$250. For: Fantastic adventure (see above); also social life on the island: a French movie, four dances, a football game, gifts for the folks back home. (B & B \$2.50 a fifth instead of 8 bucks, and so on).

Via Gus a chance at the famed Codfish in FP8AP's 32-foot cabin cruiser "Atta Boy," and one night at Gus's home, a dinner of unequalled excellence.

Where else can you go these days for a two-weeks' vacation, in a new country, enjoying life and your favorite hobby to the hilt, and for so little?

Would you mind repeating that call again, old man? Did you say FPn8ZZQ, old man? The QRM is pretty rough down here. Give it another try?

(Puzzle on Page 49)

A	R	R	A	Y	C	O	U	P	L	E	T	A	P	E	D
T	O	O	L	A	M	A	T	E	U	R	S	N	O	D	E
O	U	T	I	N	G	T	T	S	S	O	U	T	P	U	T
M	T	G	O	E	S	E	T	A	N	T	E	C	E		
S	E	I	N	E	S	C	R	E	E	N	E	N	A	R	
D	O	E	R	S	A	R	T	U	S	N	T				
S	N	D	H	A	S	H	C	A	N	A	P	E	S		
P	O	I	G	I	V	E	S	H	E	I	K	O	T		
R	A	Z	E	E	A	S	E	R	R	F	A	R	E	A	
E	R	I	E	L	I	R	A	T	I	O	S	T	E	T	
A	N	I	D	L	E	S	R	A	R	E	A	L	I		
D	I	G	S	E	S	T	C	A	L	M	M	B	C		
N	L	I	D	N	A	D	S	C	A	L	P				
A	T	E	D	G	A	N	G	E	D	O	G	E	E	S	
S	R	E	L	A	N	T	O	O	P	E	N	W	E		
C	U	R	V	E	D	B	I	A	S	I	D	E	A	T	E
O	D	E	E	E	L	E	C	T	R	O	N	T	R	E	K
T	E	N	S	E	L	E	S	S	O	N	U	S	E	R	S

SILENT Coaxial Relay

MODEL
DKC-GE



TESTED AND PROVEN BY AMATEURS AND INDUSTRIALS

New magnet principle makes high-contact pressures possible—gives a new concept of low-contact resistance. Free of AC hum or chatter, available with special receiver protecting connector and heavy-duty external SPDT switch.

One-million operations completed in life test with no apparent deterioration. Power consumption, AC models approx. four watts; DC models three watts. V.S.W.R. at 150 mc 1.1 and 1.2 at 300 mc. Coil voltages: AC 6, 12, 24, 110 and 220; DC 6, 12, 24, 48, 110 and 220. Special coil voltages available. **GUARANTEED!** Fully backed by factory warranty for unit replacement.

Price \$10.90 to \$15.65

DOUBLE MALE-CONNECTOR (DKF2) for mounting relay directly onto output of transmitter \$1.45. See your local electronic parts dealer or write direct for complete specifications.



DOW KEY CO., INC.
THIEF RIVER FALLS, MINNESOTA

For further information, check number 41 on page 126.

why wait?

Radio Products Sales'
easy time payment
plan makes Collins
SSB equipment yours now!

A down payment of as little as \$95.00 can put a Collins 75A-4 in your shack now. Take 20 months to pay the balance in monthly installments of \$36.00. Contact us now for easy payment terms on any Collins equipment. We have the complete line.

Collins 75A-4 SSB Receiver	\$ 645.00
Collins KWS-1 SSB Transmitter	\$2,095.00
Collins KWM-1 SSB Mobile/Fixed Station Transceiver	\$ 820.00

Radio Products Sales Company

1237 Sixteenth Street
Denver 2, Colorado

For further information, check number 42 on page 126.

DX [from page 85]

- JT1AA—Ulan Bator, Mongolia. Via OK bureau or Jan Sima, OK1JX, Podolska 1 Praha 15, Czechoslovakia.
- K6ICS—(New) Mike Gauthier, 10936 Oriole Ave., Grenada Hills, Calif.
- ex-KA5ZS—(Now W6UWL) Zane Sprague, 831 Joyce Drive, Port Hueneme, Calif.
- KAØSC—KAØSC, APO 815, PM, San Francisco, Calif.
- KC4U stations—C/O Warrant Officer W. E. Wren, Room 220, Bldg. "D", 6th and Independence, S.W. Washington, D. C.
- KG1BB—Luke Rogers, 1983D AACS SQDN, APO 23, PM, N. Y.
- KL7CEW—A2C L. T. Diehl Jr. AF 19557187, 795 AC&W SQDN. APO 706, Box 43, Samoa.
- KS6AD—W. R. Kellen, Pago Pago, American Samoa, Seattle, Wash.
- KW6CE—George, Box 83, Wake Island, Pacific.
- OA4AP—Cesar, Box 538, Lima, Peru.
- PJ2SA—Officer in charge, Radio Station, Sabana, NWI.
- PJ5AA/PJ5CA—(G5RV/VP4RV etc.) Louis Varney, Box 3946, Caracas, Venezuela.
- SV1SP—George N. Zarifis, 26 Zaimi St., Athens, Greece.
- SVØ stations—APO changed from APO 206 to APO 223.
- SVØWQ—(Crete) DL4AAP/W6GHH. PFC Stew Fason, HG&SVC CO, 2nd Battle Group, 7th Regt. APO 36, PM, N. Y.
- UA9DK—Box 9, Sverdlovsk, U.S.S.R.
- VE3AHU/SU—(Gaza strip) Via VE3 Bureau.
- VK9AD—Stan, Norfolk Island, via Australia. (No IRC's—Send U.S. stamps.)
- VK9VM—Ian, Posts and Telegraphs, Rabaul, Territory New Guinea.
- VKØAS—(Mawson Base Antarctica) Via VK3KB, Cards answered in 1958.
- VP4TF—Cecil Gomes, 542 Gallus St., Port of Spain, Trinidad, BWI.
- VR4CW—Box 49, Honiara, Solomon Islands.
- VS1HJ—Mike Plummer, 132 CA Lloyd LEAS, R.A.F. Changi, Singapore.
- VS1HU—R. N. Amateur Radio Club, Wireless Station, Kranji, Singapore.
- VS1HZ—4 Court Road, Serangoon Estate, Singapore 19.
- VU2 Bureau—(New) Box 534, New Delhi, India.
- W4FCB/KS4—(Swan Island) W. T. McClain, CAA Swan Island, Via CAA, Tampa, Fla.
- W4QCW—(New) Bob Eshelman, 4924 Suburban Ave., Apt. 4, Richmond, Va.
- WV4BW—Athniel Ottley, Borger Gade 6C, St. Thomas, Virgin Is. USA.
- XZ2TH—U Tin Mia, 75, Bogyoke Aung San St., Rangoon, Burma, or via W6NNV.
- ex-ZB2R—G. C. Wall, 91 Swiss Ave., Chelmsford, England.
- ZM6AS—Via ZL2LB.

[Continued on page 112]



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[from page 110]

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emen.
anks to So. Calif Bulletin, Willimette Bul-
West Gulf Bulletin, W0QAZ, W8PQQ
Y, W4IEH, KL4DCF, W4AUL, K2GFQ
WP, OVARA Bulletin.

propagation [from page 65]

the cycle is estimated to have reached a
smoothed sunspot number of 188.
ased upon an empirical study of several
acteristics of previous sunspot cycles, solar
ity during 1958 is expected to decline
a high of 180 or so, to a smoothed sun-
number of about 145 by the end of the
Despite the fact that solar activity is ex-
d to decline during 1958, the averaged
forecast is more intense than any re-
d during all of the previous cycles ob-
since 1749! The trend of the present
t cycle, including the forecast for 1958,
n in Figure 1.
an excellent correlation is known to
etween the smoothed sunspot number
ospheric conditions, conclusions reached
udies of sunspot data may be assumed
to the ionospheric phenomena as well.
therefore expect that the record break-
opagation conditions observed on the 60-
and 20-meter bands during late 1956
1957 will continue through 1958, dim-
only slightly. Although the peak seems
passed, 1958 *should be another good*
the higher frequency bands. The change
activity is not yet significant enough
ence propagation on the lower fre-
bands, so conditions on 40, 80 and 160-
are expected to be much the same dur-
1958 as they have been for the past few
years.

Contest Critique

Data is now available from several dozen
amateur observers and from Ionospheric Re-
search stations throughout the world, and for
those of you who don't already know it, here's
what happened propagation-wise during the
1957 CQ DX Contest periods.

As predicted in this column for October and
November, propagation conditions during both
the Phone and CW periods of the CQ DX
Contest were very good. In fact they appear
to have been *much better* than during any pre-
vious DX contest. Early reports received by CQ's
Contest Editor, W1WY, indicate that the 1957
scores should break last year's record-breaking
ones by a considerable amount! With solar
activity now decreasing, it may be a long time
before we have propagation conditions during
a DX contest as good as this last one.

73, George, W3ASK

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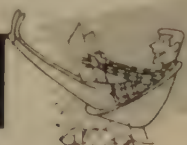


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As soon as I can make him see the ridiculousness of the whole thing we will help you increase your pride of ownership of your copies of CQ by making them more expensive. In the meantime you can still, if you insist, push us further in the hole by taking out a subscription at the old (ugh!) low rates below.

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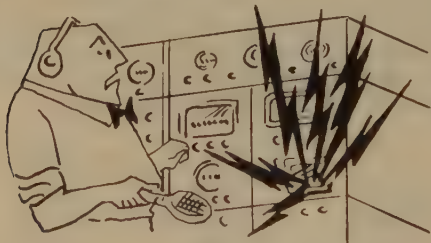
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For further information, check number 46 on page 126.

Transistors [from page 61]

reverse direction (so that it is not conducting) it will break down quite suddenly. This breakdown point can be controlled in manufacture or by sorting diodes into the various Zener ranges. The diode may be used in regulated transistorized power supplies, for overload protection in sensitive circuits or even as a current regulator. For computers, Zener diodes find application in function generating networks and for information storage.

Sylvania announces a new high voltage power transistor has been added to their new line. The 2N296 is ideal for high voltage power amplifiers and switching applications in which a 25 to 60 volt supply voltage is required. The 2N296 features a welded hermetic seal and has a collector current of two amperes.

General Electric Company has revealed a new semiconductor device which will replace relays and certain power tubes. The device will find application in transistorized power converters and for motor and welding regulators. Silicon controlled rectifiers are still in the laboratory development stage and probably will not be ready for the commercial market until the fall of 1958. 73, Don, W6TNS

DE W2NSD [from page 24]

... only about four pages are left open. We're trying to arrange a special mobile event for amateurs in the Greater New York Area... suggest you mark aside May 18th for this as it will be a lot of fun. If any of the clubs around Brooklyn or Long Island are interested in helping out with this event their assistance will be welcome. We'll try to have a really worthwhile prize for the winner and runners up.

Flying Department

George Zarin, W2DIO has signed on as our flying consultant and coordinator. Come spring maybe we will have some doings for flying hams. For the present we are trying to work up a list of all amateurs who have planes, so if you fit this category please drop a card with your call, QTH, and type plane to George, c/o Harvey Radio, 103 West 43rd Street, N. Y. 36.

73, Wayne



hamfest



The Lawton-Fort Sill Amateur Radio Club will hold its annual Founder's Day "Ham-Fest" at the Community House of Lake Quanah Parker, in the Wichita Wildlife Refuge of Fort Sill, Oklahoma, on Sunday, 9 February 1957. Admission is \$2.50 per person, which includes a catered barbecue dinner and chances on all prizes if pre-registered.

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If the receiver circuit is not to be tampered with, then a socket to socket jumper, above chassis, with insulation taped around the resistor pigtails can do this fine. The ends are

merely wrapped around the proper tube pins upon tube insertions.

If the gain control is on the last grid, then there is another variation which should be used. The connection should be between the last audio grid and plate, including a series blocking condenser of not less than .005 mfd. with the resistor.

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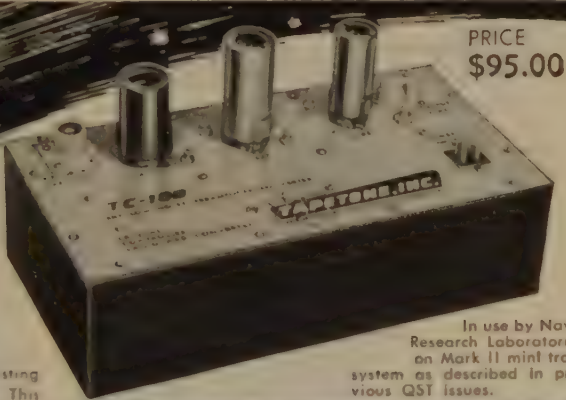
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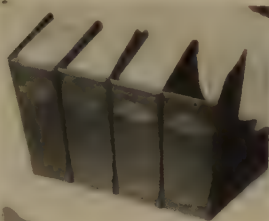
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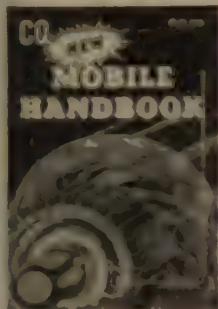
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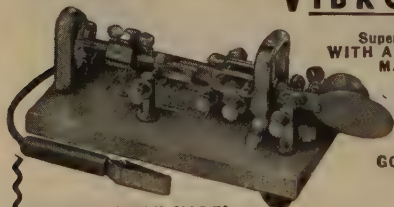
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Exciter [from page 51]

band edge, and when it is produced by taking the difference of two high-frequency crystals. For example, 19,360 kc could be used with 15,850 kc to produce 3505 kc. If the individual units had rated tolerances of 0.01% the permissible maximum errors would be 1936 cps and 1585 cps. The total error of the heterodyne (if the individual errors were in opposite directions) would be 3521 cps; the error is now greater than 0.1%, an entire order of magnitude. Operation might be much closer to the band-edge than the user realized. However, when the sum heterodynes are used, regardless of the relation between crystal frequencies and the heterodyne, the maximum possible error is the same as that of a single crystal of the same frequency and tolerance rating.

To some readers the application of heterodynes may still seem to be wasteful—using two crystals and two tubes to accomplish what could be done with one tube and one crystal ground to the desired frequency. As will be demonstrated below, however, it is not necessary to have twice as many crystals as one has usable frequencies. The crystal bank at W6QJJ contains 52 frequencies, none of which are usable at either fundamental or second harmonic. A comparison of all possible pairs revealed 56 heterodynes distributed through the 80, 40, and 20 meter bands. Not included in this total are a half dozen in the 160 meter band. The better than one-to-one ratio is due to the fact that the majority of crystals are usable with two or more others to produce heterodynes in the amateur bands. This ratio, incidentally, is slightly better than can be obtained with single, inband crystals!

This brief article by no means exhausts, but only surface-scratches the possibilities of the use of heterodynes. As mentioned earlier, there are many other possible circuit arrangements. The arrangement of fig 1 is probably the simplest; it worked as well as any of those tried. A few possibilities are:—plate take-off of the signal with a separate mixer, tetrodes or pentodes instead of triodes; regeneration (shunt capacitance, about 75 mmfd across the grid leaks, or series inductance) may be required for crystals which fail to oscillate in the untuned circuit.

Although no effort has been made at this station to utilize them, the oscillator output contains harmonics of the heterodynes and heterodynes between harmonics of different order including the fundamental. Utilization of these frequencies will require greater amplification and probably greater care in regard to suppression of spurious radiation.

In closing it might be mentioned that the circuit will also function with single, in-band crystals. It is hoped that this article will be, not only of interest, but also of value to those readers who wish to liquidate some of their frozen assets.

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MISCELLANEOUS

MEET your Winter-Vacationing friends in Fort Lauderdale, Florida, at Broward Amateur Radio Club's second annual auction. Date: Saturday, Feb. 15, QTH: 800 N.E. 15th Ave. Doors open 10 a.m. Lunch at noon Auctioning at P.M.

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For further information, check number 35 on page 126.

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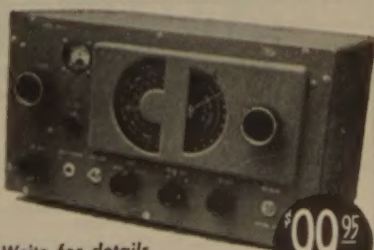
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OOPS...

Good Grief Department

Sounds! When we lose things in the shuffle around here, we lose them in large bunches. And we lost one last month. One column of the article on neutralizing of pi-network tetrodes ended up on the printers floor instead of in the magazine and it was crucial too. The plot was this: Brooks W5OSL was looking for some way to neutralize the final under load without electrocution setting in. He was just about to reveal his plot when we dropped the type basket. It goes about like this...

I now began to wonder if there were not some component in the bridge neutralization network which could be varied under full load conditions but which would not entail the making of adjustments on NC. Obviously the interelectrode capacitances could not be "adjusted," and the only other component remaining is C_1 . At this point a "light" appeared. C_1 was in reality quite as critical as NC in bringing about neutralization. In place of having 2,000-3,000 volts on it, however, the only dc potential on this capacitor is the bias voltage. A further advantage is that one plate is at ground potential. So why not make this condenser also variable? It could easily be adjusted during operation of the stage and should be effective in producing neutralization of the circuit.

The most effective practical way of determining precise neutralization is by observation of the grid meter during typical operation. If a stage is accurately neutralized the plate tuning capacitor may be rotated slightly off resonance in either direction, and the grid current will rise slightly when the plate tank circuit passes through resonance. It will decrease equally on both sides of plate resonance. This provides a very accurate indication of neutralization under operating conditions.

To test this "gimmick" the previously existing 4-125-A amplifier was put on the bench and in place of the 0.01 mmfd fixed capacitor a 20-470 mmfd variable capacitor was installed at C_1 . This was mounted directly through the front panel of the amplifier. The spacing of this capacitor need not be large, for there is virtually no danger of the bias voltage producing an arc. The neutralizing condenser NC was arbitrarily set at about the halfway point, and the final was reinstalled in the rig. Without changing the value of NC, grid excitation was applied and C_1 was gradually rotated until there was no appreciable change in the value of current indicated on the grid meter with rotation of the plate input capacitor. At this point reduced plate and screen voltages were applied and the amplifier was partially loaded to the antenna. The re-

[Continued on next page]

[From the previous page]

ults obtained now with further neutralization were truly astonishing. A setting was quickly found for C_1 at which the amount of grid current increased very slightly on resonance of the plate input capacitor, and decreased equally on both sides of this point. At this adjustment the plate and screen voltages were raised to provide full input to the tube and the neutralization was again checked. As expected, a significant change in the loading of the tube produced a slight change in the point of adjustment of C_1 at which precise neutralization occurred. With each new adjustment of C_1 the grid tuning capacitor C_2 was retuned for maximum grid current. The amplifier now was seen to operate more stably than any one which we had ever previously built. A standard-make four year old TV set with no line or antenna filters was turned on approximately three feet from the final amplifier and at the point of precise neutralization no interference of any sort could be detected on the TV set. There Brooks went on to say that he found that a different setting of C_1 was needed for each band. You can check back in January for full details on pages 52-53 and 114. It's a shame we loused that one up for that certainly was one of the most important TVI articles that we've ever printed.

No other goofs have come to our attention for the January issue. Several questions have arisen over the Souping up the Super-Pro article in December and we hope to get some amplification of the perplexing points one of these months for you from the author (in Japan). No other questions have popped up out of December.

MARS TALKS

Here is the schedule of speakers who will address the Eastern Technical Net of Headquarters USAF-MARS during the month of February.

Feb. 2—"Satellite Tracking with the Mini-Track"

Mr. Matthew Lebenbaum,
Airborne Instruments
Laboratory.

Feb. 9—"Antenna Symposium"

Mr. Bruce Woodward, Air-
borne Instruments Lab-
oratory.

Feb. 16—"Antenna Symposium"

Mr. Warren Offutt, Airborne
Instruments Laboratory.

Feb. 23—"Telemetry"

Mr. R. Popkin-Clurman,
Pres., Telecrome, Inc.

On March 2, 9 and 16, we will have an "Airways Electronics Symposium" with speakers from the major domestic and international airlines. Mr. William T. Carnes of AERinc will be moderator.

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For further information, check number 53 on page 126.

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